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## AN APPROACH TO THE DISTINCTION OF MEDICAL AND SURGICAL JAUNDICE

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IN PLANNING this presentation, I purposely selected a rather cautious title, because of the many dangers which are inherent in this problem and of which I am sure most physicians are quite well aware. Despite a long interest in the subject of jaundice and the advantage of having had considerable and varied clinical material at the University hospitals, I would be the first to admit that the differential diagnosis of jaundice is by no means a closed chapter. In fact, it is being continually rewritten, and I have no doubt that important additions will be made in the not distant future.

As any physician must, I shall commence at the bedside with the history and physical examination. I shall not consider either of these areas exhaustively but only certain points that I believe need special emphasis. The history of pain, even of typical biliary colic, should not induce one to conclude too readily that there is a common duct stone. As have others, we have repeatedly encountered such attacks in cases of cirrhosis, less often in hepatitis, and still less frequently in patients with primary carcinoma of the common duct or ampulla. Distinct chills point rather clearly toward common duct stones, especially if accompanied by spiking fever. They may be met with, however, in cases of carcinoma of the ampulla or common duct with associated cholangitis, and they are observed at times in infec-

tious hepatitis, but here they are largely limited to the pre-icteric or prodromal period, disappearing with the onset of jaundice.

One must, of course, give strict heed to any history of chemical exposure, especially to such substances as cinchophen or carbon tetrachloride, but in recent years a great deal of evidence has accumulated that the accidental transmission of the virus of homologous serum hepatitis, by means of parenteral therapy or even simple needle puncture, is a matter of no little moment to the whole problem of jaundice. The incubation period most often is between two to four months, although there are well-recognized exceptions on either side of this range. The possibility of homologous serum hepatitis must be seriously entertained in any individual who became jaundiced approximately three months after a procedure has been carried out which involved needle puncture. There is sufficient reason to believe that the virus may be transmitted by such simple means as needle puncture for blood cell counting or micro blood-sugar determinations, so that it behooves all of us to pay more attention to sterilization of our equipment.

I shall consider only a few points in the physical examination that I believe need additional emphasis. The first of these is the so-called foetor hepaticus, liver breath, or amine odor. The exact nature of this curious odor is still unknown. Its presence strongly suggests a diffuse parenchymal liver disease or medical jaundice, especially when it is outspoken and pervading the patient's

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room. Even milder degrees, noticeable only during the close examination of the patient, are usually related to parenchymal jaundice rather than extrahepatic biliary obstruction. No one has been

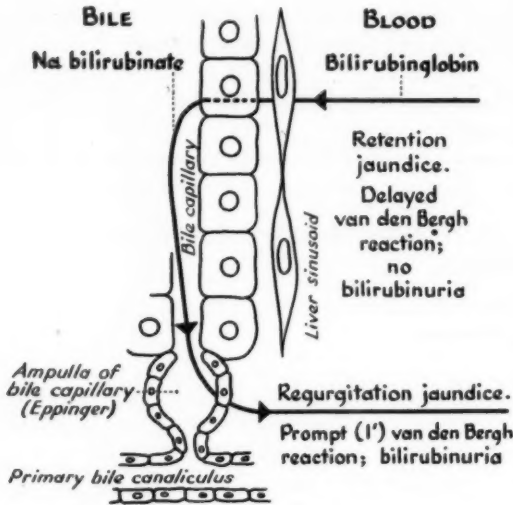


Fig. 1. Schematic drawing of pathological physiology of jaundice.

able to describe the odor with any precision, and some recognize it much more easily than others. It is ominous but not necessarily fatal in its significance.

The presence of multiple and especially of large spider nevi over the neck, shoulders, arms, hands, and upper thorax constitutes a physical finding which points clearly toward medical rather than surgical jaundice. These may appear with an acute hepatic injury and disappear with healing.

Most physicians are well aware, I am sure, that if the liver is demonstrably small or not significantly enlarged in the presence of marked jaundice, especially if the latter has been present for several weeks or longer, the cause is more likely to be a diffuse parenchymal disorder. It is perhaps less often appreciated that a markedly enlarged liver is not too uncommon in both hepatitis and cirrhosis as well as certain types of injury associated with fatty metamorphosis, so that increased size or even tenderness is of relatively little help in the differential diagnosis of jaundice. The most important physical sign of all is one that is too frequently overlooked, namely, that of the palpable, smooth, non-tender, distended gall bladder, a sign which is almost pathognomonic

of carcinoma of the pancreas or main bile ducts. This is often referred to as Courvoisier's sign, but wrongly so, since Courvoisier was a pathologist and his statements<sup>2</sup> in this direction related only to the incidence of atrophic or shrunken gall bladders in cases of common duct stone, and of distended gall bladder in cases of cancer of the pancreas or bile duct. He called attention to the relative frequency of these two phenomena but did not offer his observations as a law nor describe a clinical sign. In this connection it should be emphasized that a markedly distended gall bladder may not be palpated at times, as in some instances it is well hidden below the right lobe of the liver and does not present against the abdominal wall. Thus the sign is of importance only when positive, but then it is of the greatest importance and should not be neglected. The distended gall bladder of this type is often visible as well as palpable, sometimes, in fact, being better seen than felt.

Splenic enlargement in a case of jaundice greatly favors a medical rather than a surgical type, but there are some exceptions, notably strictures of the common duct or common duct stones of long standing with secondary biliary obstructive cirrhosis.

The presence of melanosis of the skin in addition to jaundice is always suggestive of cirrhosis. This is frequently associated with a loss of axillary hair, and it is of some importance that cirrhosis of the liver is distinctly more common in relatively hairless individuals.

We may turn now to a brief consideration of the pathological physiology of jaundice with particular relation to laboratory diagnosis. This has been considered in more detail elsewhere.<sup>10,14</sup> The schematic drawing shown in Figure 1\* is a somewhat oversimplified plan, embodying concepts for which the majority of available evidence speaks, and based in part upon the fundamental classification of jaundice provided some years ago by Rich.<sup>8</sup> In Figure 1 it is seen that a bilirubin protein complex is brought to the liver in the blood stream. As indicated in the figure, the protein to which this bilirubin is attached is probably the original globin of the hemoglobin molecule. This bilirubin complex has come directly from destroyed hemoglobin, either from old red

\*Permission to publish this figure granted by Grune and Stratton, Inc., New York. C. J. Watson: Some newer concepts of the natural derivatives of hemoglobin. *Blood, The Journal of Hematology*, 1:99, 1946.

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blood cells which are undergoing destruction every day in the reticuloendothelial system generally, or under pathological circumstances, from such areas as extravasations of blood or pulmonary infarcts. The formation of bilirubin is also increased, of course, whenever there is an increase in the rate of blood destruction, as in hemolytic anemias. In such instances the heightened bilirubin production is often mainly in the spleen.

Retention jaundice may be defined as an abnormal accumulation of the bilirubin protein complex in the blood—in other words, an hepatocellular inability to clear the blood of this substance. This type of bilirubin is characterized by a delayed or indirect van den Bergh reaction and by a failure of bilirubin to appear in the urine. Under normal circumstances bilirubin is excreted almost completely into the bile, the normal concentration in the plasma probably not exceeding 1.0 mg. per 100 c.c. In the process of excretion into the bile the combination with protein is broken. Bilirubin in the bile is in all likelihood a sodium salt. The majority of evidence indicates that bile containing this sodium bilirubinate may gain access to the blood either because of increased intrabiliary pressure or because of injury of the finer intrahepatic biliary radicals or cholangioles. This abnormal transit of bile into the blood is synonymous with regurgitation jaundice. The sodium bilirubinate in the blood is characterized by a prompt van den Bergh reaction. This substance readily passes into the urine. The prompt van den Bergh reaction is best defined as that which occurs within the first minute.<sup>10</sup> Thus, regurgitation jaundice is characterized by a prompt van den Bergh reaction and bilirubinuria. There is considerable evidence that the weakest point in the intrahepatic biliary tract—that from which the regurgitation under the circumstances mentioned is most likely to occur—is the ampulla of the bile capillary. Interestingly enough, Aschoff<sup>1</sup> spoke of this as the "Achilles heel" of the biliary tract. Studies by Eppinger<sup>3</sup> and by Ohno<sup>7</sup> and his associates bear out this concept. There is considerable evidence that the regurgitated bile first gains access to the lymph spaces and thence via the thoracic duct, or in part directly, to the blood.

While Rich's fundamental subdivision of jaundice into the two main forms, retention and regurgitation, is of considerable value as a primary method, it is insufficient from the practical stand-

TABLE I. THE MAIN FORMS OF JAUNDICE FROM FUNDAMENTAL AND PRACTICAL STANDPOINTS

<i>Retention jaundice</i> —hepatocellular inability to remove bilirubin from the blood. Hemolytic jaundice Constitutional hepatic dysfunction Mild hepatocellular injury	} Medical
<i>Regurgitation jaundice</i> —cholangiolar leakage of bile to lymph and thence to blood. Infectious hepatitis Moderate or severe hepatic injury of various causes Hepatic cirrhosis Diffuse hepatic carcinomatosis, Hodgkin's disease, or lymphoblastoma	
<hr/>	
Extrahepatic biliary obstruction due to: Cancer and related conditions Calculus Stricture And with or without a secondary, obstructive biliary cirrhosis.	} Surgical

point of distinguishing medical and surgical jaundice, as may be seen in Table I. This has been discussed elsewhere.<sup>11</sup>

It is noted in Table I that all of the types of retention jaundice are medical (except for the question of splenectomy in cases of hemolytic jaundice). It is also noted that there are many examples of medical jaundice in the regurgitation group, and this should be emphasized because it has often been thought that if the van den Bergh reaction on the blood serum is of prompt direct type and there is bilirubin in the urine, the patient is suffering from an extrahepatic biliary obstruction which requires surgical treatment. As a matter of fact there are fully as many and probably more cases of medical regurgitation jaundice. It should also be noted that all of the types of regurgitation jaundice listed are undoubtedly associated with some degree of retention jaundice, generally more with the medical and less with the surgical types.

Although I have been discussing the pathologic physiology and biochemistry of jaundice, we may still consider ourselves to be at the bedside since there are two simple laboratory tests which may be thought of as bedside tests. Both are procedures which the practicing physician can carry out in the home since they require but little equipment, and this is such that it can easily be carried in the physicians' bag; and what is fully as important, they require but little time for execution. The first is the simple test for bilirubin in the urine. The method which we prefer is the barium strip modification of Harrison's test.<sup>12</sup> The barium impregnated strip is held briefly in the urine sample to be tested. The urine runs up the strip by capillary attraction, and at the surface of the

urine any bilirubin which may be present is concentrated. One then drops upon this surface area one or two drops of Fouchet's reagent, and a green color appears if bilirubin is present. The finding

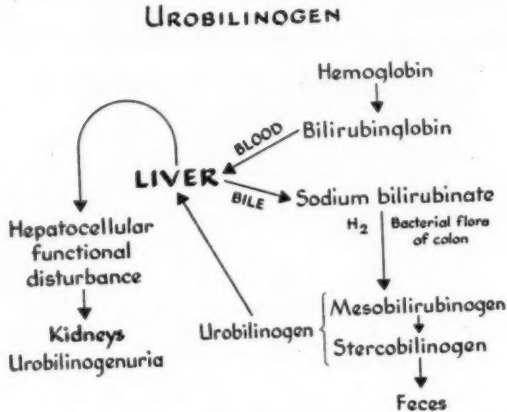


Fig. 2. Summary of urobilinogen physiology.

of bilirubin in the urine at once classifies the case in the regurgitation jaundice group but, as seen in Table I, it does not distinguish medical from surgical jaundice. It simply narrows the field.

The other bedside chemical test is the urine Ehrlich reaction to which urobilinogen is the main but not the sole contributor.<sup>9,10,13,15</sup> A brief summary of urobilinogen physiology is given in Figure 2.† Here it is seen that the sodium bilirubinate, to which we have already referred, is reduced in the colon to two chromogens, the composite of which is designated as urobilinogen. It is further seen that this urobilinogen is partly reabsorbed into the portal circulation returning to the liver. Under normal circumstances little or none of this reabsorbed fraction enters the general circulation, but, in most instances of hepatocellular functional disturbance, even though transitory, variable fractions are permitted to enter the general circulation and are excreted in the urine. In considering Figure 2, it may be noted that the feces Ehrlich determination,<sup>13</sup> or the determination of milligrams of urobilinogen per day in the feces,<sup>9</sup> which is preferable but is much more time consuming and difficult, gives an insight as to the interference in the outflow of bile from the liver. If there is complete biliary obstruction, as in cases of cancer of the pancreas, little or no urobilinogen is found in the feces. In cases of reten-

tion jaundice, the feces urobilinogen determination is of value because it serves to distinguish hemolytic jaundice in which the amount is significantly and often markedly increased.

The colorimetry of the urine Ehrlich reaction has been described in detail elsewhere<sup>13,15</sup> but may be summarized in Table II.

It will be noted in Table II that a urine sample collected from 2:00 to 4:00 p.m. is preferred. This is because of the fact that if an excessive amount of urobilinogen appears in the urine during a twenty-four-hour period, it is more likely to be observed in the afternoon, probably because of metabolic activity. The actual colorim-

TABLE II. COLORIMETRY OF URINE EHRlich REACTION

2.5 c.c. of a urine sample (preferably the total amount obtained between 2 to 4 p.m. + 2.5 c.c. Ehrlich's reagent + 5 c.c. saturated aqueous sodium acetate solution.
2.5 c.c. of urine + 5 c.c. saturated aqueous sodium acetate solution + 2.5 c.c. Ehrlich's reagent. (This is the blank.)
Comparator block (pontacyl standard) or photoelectric colorimeter.
1 Ehrlich unit—color intensity of 1 mg. urobilinogen per 100 c.c.

TABLE III. SOME CHARACTERISTIC PATTERNS OF URINE EHRlich AND BARIUM STRIP TESTS IN CASES OF JAUNDICE

Urine Ehrlich	Urine Bilirubin	Type of Jaundice
1. 0	++++	Regurgitation jaundice; may be either medical or surgical. Little or no bile entering intestine.
2. +++++	0	Retention jaundice or liver disease without jaundice. Often noted in hemolytic jaundice; also in hepatic cirrhosis.
3. +++++	+++++	Regurgitation jaundice; more likely medical, either hepatitis or cirrhosis.

etry which is referred to in Table II is of value in eliminating the personal equation in gauging the intensity of the color reaction and also for purposes of serial determination over a period of time. Further than this, if a short period sample covering a two-hour interval is employed, the factors of dilution and concentration are largely obviated. Nevertheless, a single observer, as for example a practicing physician, who cares to employ the simple qualitative test (line 1 in Table II) will be able to gain considerable information from it, especially if serial samples are employed. If the same individual is looking at the reactions, he is able to gauge fairly well the changes in intensity which may occur, and he can often draw valuable conclusions from these changes.

While it is true that the barium strip test for bilirubin in the urine and the urine Ehrlich reaction often, and in fact usually, do not permit a

†Permission to publish this figure granted by Annals of Internal Medicine. C. J. Watson and F. W. Hoffbauer: Liver function in hepatitis. Annals of Internal Medicine, 26:813, 1947.



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definite diagnosis by themselves, they are nevertheless of considerable help in getting the examiner on the right track, when combined with the history and physical examination. What I

One has had to recognize in studying liver function clinically, and especially with respect to difficult problems of jaundice, that it is necessary to make a composite study rather than to pin one's

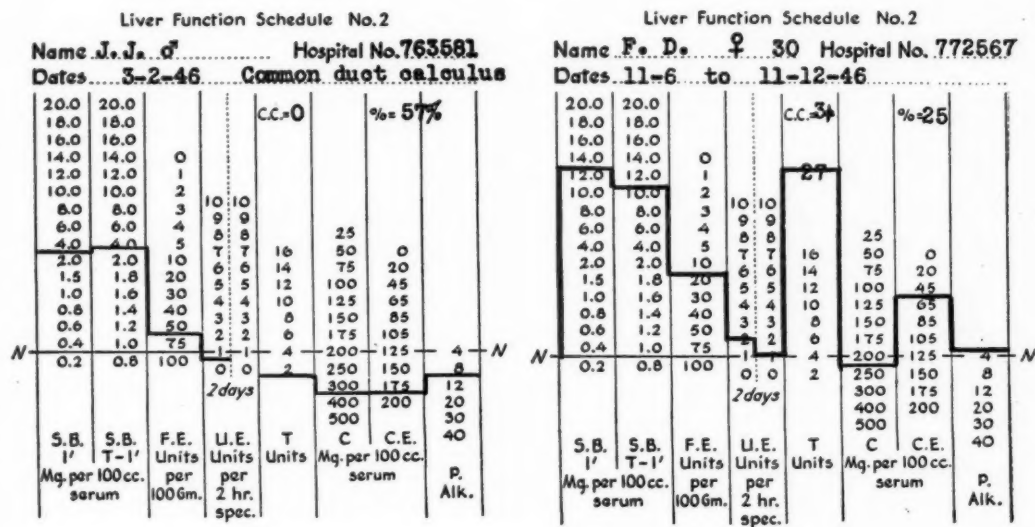


Fig. 3. Results of composite liver function studies in uncomplicated biliary obstruction (Case 1) as contrasted with hepatitis (Case 2).

mean by this is perhaps best indicated in Table III. This has been discussed in a previous communication.<sup>11</sup>

There is little doubt that one can often gain more exact information if the per diem urobilinogen excretion in urine and feces can be determined. The characteristic ranges are shown in Table IV.<sup>11</sup>

Unfortunately there are many cases of jaundice in which, despite a careful history, physical examination and the use of simple laboratory tests, the enigma persists and the question of medical or surgical jaundice has not been answered. If one would avoid a needless operation which may even prove to be the fatal straw in the case of severe parenchymal hepatic disease, or if one would not overlook a silent common-duct stone or a carcinoma that may be operable, it is necessary in such instances to turn to the laboratory for additional aid. Although I have not kept any exact records on the point, I am inclined to believe that 60 to 70 per cent of all cases of jaundice may be diagnosed at the bedside without the aid of any special laboratory methods. The use of the latter probably increases one's efficiency to from 85 to 90 per cent.

TABLE IV. UROBILINOGEN EXCRETION

Type of Jaundice	Feces	Urine
<b>Retention:</b>		
Hemolytic jaundice	Markedly increased	Normal to greatly increased
Constitutional hepatic dysfunction	Normal	Normal or slightly increased
<b>Regurgitation:</b>		
Biliary tract cancer	<5 mg. per day in 90% of cases	<0.3 mg. in 90% of cases
Calculus	>5 mg. per day in 90% of cases	Normal to greatly increased (with complications)
Parenchymal (hepatitis, cirrhosis, or other diffuse liver disease)	Majority of cases >5 mg. per day. Some have less for several days or weeks at height of disease.	0-300 mg. Depends largely on stage of disease.
	Feces-urine ratio important:	
	Ex. { 10 mg. 5.0 mg. 600 mg. 500 mg.	

faith on but one or even two so-called liver function tests. For some time we have used rather routinely and with considerable satisfaction, two liver function schedules: No. 1 for the non-jaundiced, and No. 2 for the jaundiced patient.<sup>14</sup> The No. 1 schedule includes the fractional serum bilirubin, the barium strip test for bilirubin in the urine, the thymol turbidity test (which probably relates in the main to increases of lipo- $\beta$ -globulin),

the Hanger cephalin cholesterol flocculation test (which relates mainly to abnormalities of the serum albumin and increases of  $\gamma$ -globulin), and the bromsulphalein retention in per cent at forty-five minutes after intravenous administration of 5 mg. of the dye per kilogram. In addition, the urine Ehrlich reaction (Table II) is determined on two successive days. If not significantly increased, the urine urobilinogen in milligrams is determined on a twenty-four-hour sample, and on this sample the urinary coproporphyrin is also determined. Schedule No. 2, with which we are more particularly concerned in the distinction of medical and surgical jaundice, omits the bromsulphalein test and the urinary coproporphyrin and includes the serum total cholesterol and cholesterol esters, and the serum alkaline phosphatase. This schedule is shown in Figure 3, with the data from illustrative cases. The horizontal line between the N's represents the usual normal or upper limit of normal for the various determinations. The values above this line indicate functional impairment, especially of hepatocellular type. The cephalin cholesterol flocculation test is indicated and recorded simply as 0 to 4-plus at the top of the thymol turbidity column. The key for the various determinations is seen at the bottom of the figure.

The findings for Case 1 in Figure 3 may be said to characterize a surgical jaundice, in other words, a pure cholangiolar functional impairment with little or no evidence of hepatocellular injury. By contrast one may note the findings in Case 2 (Fig. 3). This is a profile from a case of homologous serum jaundice. It was of interest that this patient, a housewife, aged thirty, had had a cholecystectomy about four months previously. This was followed by a wound abscess, at which time the patient was given three blood transfusions. She then appeared to recover and felt quite well for a period of three months. At the end of this time she became jaundiced without pain or fever, and after several weeks of jaundice was referred to the University Hospital in the belief that she might require an operation to remove a common duct stone. The composite liver function study, however, clearly revealed extensive diffuse hepatic functional impairment. As noted in Figure 3,\*\* the liver profile of Case 2 indicates marked regurgitation jaundice with almost complete exclusion

of bile from the intestine, a severe disturbance of the plasma proteins, thymol turbidity greatly elevated, and a positive cephalin cholesterol test, little or no elevation of the total cholesterol in spite of marked evidence of regurgitation jaundice, and a low cholesterol ester percentage, also a low normal alkaline phosphatase (this should be considerably elevated if jaundice of this degree were due to simple biliary obstruction such as a common duct stone). A liver biopsy was done which showed a rather marked diffuse hepatitis and cirrhosis, clearly not the type of change that one would expect with an extrahepatic biliary obstruction. As a consequence of these findings an operation was avoided. With supportive treatment the patient improved considerably, although it seems unlikely that the liver will ever return completely to normal.

Hoffbauer, Frame, and Meinert<sup>4</sup> have recently analyzed the experience in this laboratory with the non-pigment group of determinations included in schedule No. 2 (Fig. 3). This study, which was limited to proven cases of medical or surgical jaundice, clearly reveals the relative value of the cephalin cholesterol flocculation, the thymol turbidity, the total cholesterol, cholesterol ester percentage and alkaline phosphatase determination, and of certain combinations of these procedures. I shall not consider their results in any detail, as anyone who is interested may study them in the original. It is sufficient to say that the total cholesterol and cholesterol ester ratio and the alkaline phosphatase were about of equal value in the distinction, each of the three showing considerable overlapping—in other words, results contradictory to the proven diagnosis. The cephalin cholesterol flocculation was the most reliable, exhibiting the least positivity in surgical jaundice and the greatest in medical jaundice. The results of the thymol turbidity test approximated those of the cephalin cholesterol flocculation, but it was of particular interest that the combination of the two tests was most reliable of all. In seventy-seven cases of proven extrahepatic biliary obstruction, in other words of surgical jaundice, only one had both tests positive. Nevertheless, there were a considerable number of cases of parenchymal jaundice in which one or both tests were negative. Recent work indicates that the zinc turbidity test of Kunkel<sup>5</sup> is less likely to exhibit "false" negatives in this group.

\*\*Permission to publish this figure granted by the Annals of Internal Medicine. C. J. Watson: The prognosis and treatment of hepatic insufficiency. Annals of Internal Medicine (in press).

## MELORHEOSTOSIS

### A Case With Monomelic Distribution

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**M**ELORHEOSTOSIS is a rather rare form of osteosclerosis in that the bone changes in the involved area present a hyperostosis of a flowing type. In 1922, Leri and Joanny<sup>22</sup> reported the first case. They named it melorheostosis (Greek: *melos*—member, *rhoia*—to flow,

examination of the stomach and the colon was negative. X-ray examination of the chest showed some hypertrophy and enlargement of the left ventricle. Lung fields appeared clear. Atypical osteosclerotic changes were observed in the upper end of the right humerus and scapula. The patient had never complained of his right arm and the family history was essentially neg-



Fig. 1. The acromion process, coracoid process, and neck of the right humerus show areas of irregular, trabeculated hyperostosis with normal density between them. The neck of the scapula is normal. The upper end and head of the humerus show areas of increased and decreased density with trabeculae and bands of subperiosteal hyperostosis traversing the shaft of the bone in linear, wavy lines distally.

and *os*—bone) because the hyperostosis appeared to flow down the bones as molten wax running down the sides of a candle. Although the term melorheostosis is most generally used, some authors have applied various names to describe the condition: Leri's disease,<sup>49</sup> rheostosis,<sup>48</sup> osteosis eburnisans monomilica,<sup>34,40</sup> osteopathia hyperostatica congenita unius membri,<sup>49</sup> rhizomonomelorrheostosis,<sup>49</sup> monomelic flowing hyperostosis,<sup>35</sup> and others.

#### Case Report

H. H., a sixty-one-year-old married white male farmer, was seen at the Clinic on February 11, 1946, complaining of pain in the abdomen after eating. The pain, which was mild, had been noticed for several months and was not aggravated by fried or fatty foods, cabbage or cole-slaw. On physical examination the patient appeared well nourished and well developed. The positive findings revealed slight tenderness over the epigastrium, severe varicose veins of both legs, with associated areas of skin discoloration above the ankles. Cholecystography revealed a non-functioning, pathological gall bladder for which operation was advised. The test meal showed normal values. Roentgenological

examination and measurement of the patient's arms showed no difference in size or length. No limitation of joint movement or elicitation of rheumatic pain was found.

**Roentgenological Findings.**—Further roentgenological studies of the right shoulder, arm, forearm and hand were therefore taken and, as shown in Figures 1, 2 and 3, revealed a flowing type of osteosclerosis extending from the right scapula, along the anterior and lateral aspects of the humerus, radius, navicular, greater and lesser multangular, first metacarpal and all the phalanges of the right first digit. The acromion process, coracoid process, and neck of the right humerus showed areas of irregular, trabeculated hyperostosis with normal density between them. The neck of the scapula was normal. The upper end and head of the humerus showed areas of increased and decreased density with trabeculae and bands of subperiosteal hyperostosis traversing the shaft of the bone in linear, wavy lines. These smaller bands tended to unite in the upper third of the anterior and lateral aspect of the humerus and flow down the shaft to the supracondylar area. In many places the medullary cavity was encroached upon by the osteosclerotic condensations. Along the humeral shaft, irregular punched-out areas occurred in the region of hyperostosis. There was considerable cortical thickening in the mid-humeral shaft. These proliferative changes ended abruptly just above the lateral epicondyle, and the

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Fig. 2. Small bands of hyperostosis tend to unite in the upper third of the humerus on the anterior and lateral aspect of the shaft and flow down the shaft to the lateral supracondylar area. The elbow joint and periarticular structures are free of the pathology. There is considerable cortical thickening in the mid-humeral shaft with concomitant encroachment upon the adjacent medullary cavity. Similar changes are seen to involve the entire length of the right radius. A rather dense plate of bony hyperplasia is shown in the distal end of the radius just under the articular cartilage. No changes are observed in the right ulna.

elbow joint and periarticular structures were free of any pathologic condition. Similar osteosclerosis was observed in the entire length of the right radius. No changes were observed in the right ulna. A rather dense plate of bony hyperplasia was noted in the distal end of the radius just under the articular cartilage. Moth-eaten but osteosclerotic navicular, greater and lesser multangular bones were seen. The entire shaft of the first metacarpal and phalanges of the first digit were involved with an increase in diameter of the distal phalanx. No joint involvement or calcification in the adjacent soft parts was seen. A diagnosis of melorheostosis with monomelic distribution was made. Distribution of the osteosclerosis is shown in the sketch in Figure 4. Roentgenographic re-examination six months later showed no changes in the involved extremity. Roentgenographic examination of the skull, spine, pelvis, left shoulder, arm and forearm, and lower extremities did not reveal any pathologic process in these areas.

**Laboratory Findings.**—Blood studies, urinalysis, blood chemistry including calcium, phosphorus, serum phosphatase, plasma proteins, urea nitrogen, serology, sputum, and electrocardiographic tracings were within normal limits. A biopsy of bone was not obtained.



Fig. 3. The hyperostosis involves the navicular, greater and lesser multangular bones of the wrist, the entire shaft of the first metacarpal and the phalanges of the first digit of the right hand. The left hand and wrist are shown for comparison.



Fig. 4. A drawing showing the distribution of the hyperostotic lesions in the right upper extremity of the case herein reported.

This patient made an uneventful recovery following his cholecystectomy and returned to his farm, where he has been actively engaged since. He has been seen twice since then and re-examined because of the presence of melorheostosis. During this period of observation no



changes in the extent of the osteosclerosis or demonstration of weakness, pain or atrophy of the involved arm have been noted.

### Review of the Literature

In 1921, Leri and Joanny<sup>22</sup> described, named and reported the first case in a thirty-nine-year-old woman with a bony deformity of her left hand.

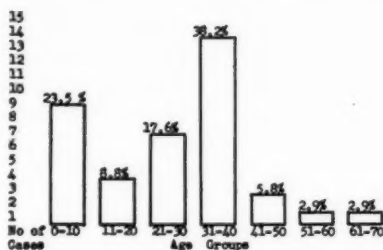


Fig. 5. Distribution of thirty-four cases of melorheostosis by age. Thirteen other cases have been reported or have appeared in the literature, for which the original articles have not been available to the authors or for which the abstracts do not give the age.

In the next ten years a total of fifteen cases were reported.<sup>16,17,18,26,28,29,30,34,36,39,40,41, 46,47,52</sup>

Four cases were reported in 1932,<sup>42,48</sup> and Kraft,<sup>20</sup> in an excellent paper, added two cases of his own to the literature and summarized, in tabular form, all the previously reported cases of melorheostosis. At the Bone Tumor Conference in 1932 at Johns Hopkins University, Parmalee presented a case of melorheostosis which was not published, but was referred to in a published paper on this subject by Widmann and Stecher in 1935.<sup>49</sup>

During 1933 five more cases were reported.<sup>20,35,43,51</sup> In Kraft's second paper,<sup>21</sup> on the pathology of this disease, he refers to a personal communication with Dr. Sussman regarding a case which the latter had seen diagnosed as marble bones. Reference is also made in this report to a case of melorheostosis seen in St. Louis, Missouri, by Sherwood Moore. Neither of the above cases has been published. Kraft<sup>20</sup> refers to and reports on a case in a man seen by Sante in 1923. Bury<sup>4</sup> refers to Sante's case in his report also.

From 1934 to 1940, twelve new cases were reported.<sup>1,3,4,7,8,9,11,13,14,37,44,49</sup> Two of these cases were associated with scleroderma.<sup>8,14</sup>

Kibby<sup>19</sup> in 1941 reported the youngest case found in the literature. His case occurred in a five-year-old Japanese girl. In 1942, Franklin

and Matheson<sup>10</sup> reported a case and reviewed the literature. Carpenter, Baker and Outland<sup>6</sup> reported a case with bilateral involvement and also referred to a case seen at Johns Hopkins Hospital and another at Boston City Hospital. However, these last two cases have not been reported in the literature.

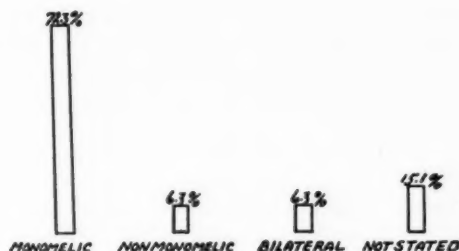


Fig. 6. Distribution of lesions in forty-seven cases of melorheostosis.

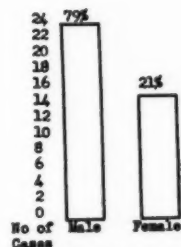


Fig. 7. Distribution of thirty-seven cases of melorheostosis by sex. Ten other cases have been reported or have appeared in the literature, for which the original articles have not been available to the authors or for which the abstracts do not give the sex.

LeVay,<sup>27</sup> Gottlieb,<sup>12</sup> Stutz<sup>45</sup> and Bade<sup>2</sup> reported additional cases. Canigioni<sup>5</sup> discussed the disease and Muller-Alberti<sup>50</sup> published a paper on the clinical aspects, etiology and pathogenesis of melorheostosis.

A total of forty-six cases are known which, together with this case, makes a total of forty-seven to date.\* Kibby<sup>19</sup> reported the youngest patient, aged five; one patient was observed for fourteen years. The average age, in those patients whose age is known, is twenty-eight years. The most frequent age period is thirty to forty years, as shown in Figure 5. Thirty-four cases were monomelic, five non-monomelic, and eight not stated, as shown in Figure 6. Three patients

\*Since this paper has been in the process of publication, Sear<sup>43a</sup> has reported a case of melorheostosis associated with leontiasis in which the melorheostosis involved the right side of the body of the eleventh thoracic vertebra and the corresponding rib. Fejer<sup>2a</sup> reported the forty-ninth case in 1948.

showed bilateral involvement. The upper limb was involved nineteen times, the lower limb twenty times. In several cases the involvement was not stated. The case of Stutz<sup>48</sup> involved only the pelvis. In twenty-three cases males were affected; females in fourteen; sex was not stated in ten cases, as shown in Figure 7. Biopsies have been done in only six cases. No autopsies have been reported. Countries where cases have been found, in the order of frequency, are the United States, Germany, Italy, France, England, Sweden, Poland, Russia and Switzerland.

### Etiology

Although the exact cause of melorheostosis is unknown, many theories have been advanced to explain the etiological factors which produce the disease. Leri,<sup>22</sup> who believed that an infectious agent was causative, was unable, after repeated attempts, to isolate one. Putti<sup>40</sup> thought that a primary imbalance of local sympathetic nerves caused a secondary vascular angiospasm and later obliterative effects along the course of nutrient vessels. Hyperostotic changes along the affected vessels resulted. Other men adhered to a neuropathic theory, but were unable to prove it because exact neural pathways were not established. Endocrine imbalance, heredity, body fluid imbalance and constitutional states have all had their advocates, but cannot be proven. Tuberculosis, syphilis, malignancy and other disease processes have been ruled out. Zimmer<sup>22</sup> has many adherents for his theory of metameric disturbance in the embryo. Widmann and Stecher adhere to Zimmer's concept and, in reporting their case, make note of the fact that a bony deformity was present at birth. A newer idea has been advanced by Moore and DeLorimier.<sup>35</sup> They believe that, in the embryo or later, subperiosteal telangiectasis develops and causes local petechial hemorrhages in the bone. Secondary vascular obliterative changes follow resulting in further telangiectasis. The osteosclerosis represents a reaction to the vascular changes and hemorrhage.

The further study of these and other cases to be found may aid in solving this mystery.

### Pathology

Very little is known of the pathology, either gross or microscopic, of this disease. Only six cases have had a biopsy study and no cases have been reported to have come to the autopsy table.

In general, the bones of one limb (monomelic)

are involved, with linear bands of hyperostosis extending from the shoulder to the distal phalanges of the hand or from the pelvis to the toes of one leg. In the lower leg and forearm usually only one of the bones is involved, and in the hands and feet the disease is usually limited to one side.

Grossly, the essential findings in involved bones consist of dense bands of sclerotic new bone. The new bone may be endosteal, periosteal or both. Areas of normal bone supervene. Periosteal hyperostosis may cause increased thickening of the cortex and subsequent increase in the width of the bone. Rough, irregular contour of bones results. Widmann and Stecher believe that endosteal sclerosis is found in early developing lesions. Bowing of an affected femur was explained by Moore and DeLorimier as an impingement on muscle origins or insertions by the hyperostosis. This altered the muscle contraction and physiological cross section. They explain the clinical findings of progressive muscular weakness on this surmise. Several orthopedic surgeons have encountered bones diseased by this entity and have described them as very hard and sclerotic in most instances. The tendency of the hyperostotic bands is to spare joints, although in some cases severe involvement of adjacent bones or calcifications in periarticular structures leads to diminution of joint mobility. Many bones are shortened by the disease, and this is borne out by the number of cases of shortened arms, legs and pelvic obliquities. Leri and Joanny's patient, when examined several years later, revealed calcifications in the periarticular structures of the right shoulder joint. No cases have been reported in which there have been spontaneous fractures.

The association of melorheostosis with other conditions has been rare and probably of no significance. In several cases there has been a positive serology. In Hall's case there was an associated tuberosclerotic sclerosis. Scleroderma was found in the involved limb in the cases of Dillehunt and Chuinard, and Gillespie and Siegling.

### Histology

Little has been written concerning the microscopic findings, since there has been a biopsy in only six cases. In Leri's case a primitive bone marrow was described together with interspersed islands of cartilage between crowded, irregular abnormal osseous lamellae and haversian canals.

Some writers have found a similar bone marrow. Others describe a dense ivory-like growth of bone with meager cellular structure. Junghagen believed the finding of concentric lamellae around the haversian canals pointed to an important clue in arriving at a diagnosis. Medullary encroachment by the hyperostotic bone was found in several cases. There was a tendency toward replacement of the fatty bone marrow by fibrosis. In general, the microscopic picture is so bizarre that no one could make a specific diagnosis of this disease from a biopsy study alone. The lesions are benign and have not shown any tendency toward malignancy in those few cases studied.

### Clinical Findings

This disease is insidious in onset, chronic in nature with periods of arrest lasting many years in some cases, and presents, in general, bizarre or vague symptoms. In most cases the bones of one extremity are involved—monomelic. Prognosis is good. Physical findings do not point to any symptom complex which one could say was pathognomonic of melorheostosis. Bony deformity has been noted at birth in several cases. Mild and vague pain in involved limbs was usually noted, and it is amenable to physiologic rest. In patients with limp and weakness of a limb due to pelvic deformity, orthopedic procedures were of value. Stasis of blood vessels in affected parts, secondary to the encroachment of hyperostotic bone, results in edema, skin changes, and to ulcerations of the skin.<sup>10</sup>

Usually the patient has such minimal complaints that medical advice is not sought. As the disease slowly advances, the symptoms become more annoying and of a continuous rather than intermittent nature. Some patients, with shortening of limbs, atrophy of soft tissues or gait disturbance, seek medical advice and are diagnosed on roentgenological study. Few cases have been diagnosed without the aid of the roentgen film.

The first vague symptoms of low-grade pain or slight deviation of the involved fingers or toes are usually found in childhood. Later in life the pain becomes more severe, the deformity increases or becomes disabling and soft tissue atrophy and shortening of the limb ensue. These symptoms are sporadic and may cease for long periods of time. Some patients never complain of anything. Ankylosis of the joints is rare and occurs only late.

Laboratory aids in diagnosis have been disappointing. Blood chemistry studies, serology, urine, et cetera, have, in nearly every case, given normal values. Imbalance of blood calcium and phosphorus has not been noted. In the differential diagnosis, however, the laboratory findings are important in ruling out other conditions.

### Roentgenologic Findings

There is a paucity of definite clinical findings in this malady, and its most characteristic finding is the vagueness of symptoms. For this reason an accurate diagnosis can be made only upon roentgenologic findings. Where this disease is found, the entire skeleton should be studied roentgenologically. The finding of melorheostosis, in the author's case, was an accidental finding since the patient had never complained of symptoms in his right arm. Examination, with roentgenologic study, done seven months later revealed no changes in the involved extremity.

In the majority of cases—monomelic—the essential finding is an extensive flowing hyperostosis which appears to extend in dense, wavy lines along one side and down the bones of the involved limb. The cortex appears dense, thickened and ivory hard. Areas of translucency may be present, especially near the joints. The joints are usually not affected. Medullary encroachment is seen somewhere in the bones of the diseased limb in nearly every case. Where the pelvis, skull or vertebrae are involved, the hyperostotic areas are usually patchy and poise more of a differential point. The new bone may cause the cortex to thicken up to 3 centimeters in the long bones. The bands of sclerotic bone do not always extend continuously along a bone, but commonly are broken up leaving areas of normal or atrophic bone between them. Where the forearm or lower leg are affected, usually only one of the double bones is involved. In general the epiphyseal structures are free of the sclerosis. Isolated patches of irregular hyperostosis most commonly are found near the bone ends adjacent to the flowing band of sclerosis. In many-faceted bones, as in the carpal or tarsal bones, the sclerosis tends to occur in opposing surfaces of two involved bones. In the most commonly seen cases, where an entire single limb is diseased, the radiographic picture is most characteristic, since the bands of sclerosis extend distally in nearly straight lines from the top to the bottom of the limb. In nearly every case

studied there appears to be a pattern of selective involvement. Punched-out areas and moth-eaten patches are seen involving the condyles of the long bones. In a few instances laminations of hyperostosis have been present parallel to the length of the shaft of the bone.

Calcification of the periarticular structures has been reported and is not uncommon in melorheostosis. Pathological fractures have not been reported.

### Differential Diagnosis

In the majority of cases, where an entire extremity is involved, the typical roentgenologic findings, together with a careful history and physical examination, are all that is needed to make a correct diagnosis. This is especially true if the condition is present in the mind of the roentgenologist or attending physician. The vagueness of symptoms should prompt an x-ray examination and if, following this, osteosclerotic areas are found, one should proceed to examine the entire skeleton.

Since the condition is so chronic, one should rule out tuberculosis and luetic osteitis by history, serological and other proper laboratory tests. History will aid in ruling out infectious and post-traumatic ossifying periostitis. Soft tissue atrophy and shortening of the involved limb in many cases are commonly associated with the typical osteosclerotic changes in melorheostosis. Although calcification in periarticular structures does not occur in some cases of long standing melorheostosis, the concomitant osteosclerosis in adjacent bones should differentiate it from myositis ossificans and calcinosis. In calcinosis the calcium deposits are irregularly scattered in adjacent soft tissues and commonly are associated with trophic skin changes, or the calcium deposits may be extruded through the skin periodically.

The roentgenologic study and clinical findings of primary and secondary bone malignancy seldom present such a picture of a flowing hyperostosis. Piergrossi<sup>30</sup> thought that in studying melorheostosis one should always consider such atypical osteosclerosis as osteopoikilosis, Albers-Schönberg's disease, Paget's disease of the bone, chronic osteomyelitis and Garre's nonsuppurative sclerosing osteomyelitis. In osteopoikilosis or spotted bones the distribution is more general, is not limited to one side of a bone, and the lesions are made up of disseminated bone islands within the bone and are not expansive. Albers-Schönberg's

type of osteosclerosis involves large or entire parts of the bony skeleton with universal encroachment upon the marrow cavities, generalized and not regional involvement, resulting in very brittle bones which usually fracture spontaneously, and severe anemia due to loss of bone marrow. If only a portion of an involved bone is seen, as the upper humerus in a routine chest film, one would have to consider Paget's disease of the bone as a good possibility. Upon further roentgenologic study, however, the picture of melorheostosis is so typical that one would have no difficulty. Chronic osteomyelitis shows no predilection for regional involvement, does not show osteosclerosis along one aspect of a diaphysis, and gives a different history and clinical findings. This is also true of Garre's nonsuppurative sclerosing osteomyelitis.

### Treatment

Rational, definitive treatment is at present unknown, since an exact etiology is lacking in this condition. To date, symptomatic treatment for pain, edema and disability have been given. On the basis of the theory of Moore and DeLorimier<sup>35</sup> that this entity is caused by subperiosteal telangiectasis, Widmann and Stecher<sup>40</sup> and others have attempted roentgen radiation therapy on their cases. The results of this type of therapy have not been found in the literature. In several cases associated with concomitant scleroderma, massage was found to ameliorate the skin changes. In several cases where gait disturbances were present because of the severity of the osteosclerosis, orthopedic surgical procedures have been accomplished with favorable end results.

### Summary

1. Melorheostosis is a rather rare type of osteosclerosis, tending to involve one extremity. Thirty-four cases were monomelic, five non-monomelic, and eight unknown. The youngest and oldest patients were five years and sixty-one years, respectively. Males were involved twenty-three times, females fourteen; sex was unknown in ten cases. The average age in patients whose ages were known was twenty-eight years, and the most frequent age period was thirty to forty years. Three patients showed bilateral involvement.

2. Including the authors' report, forty-nine cases have been reported in the literature or observed and referred to in published reports on the subject.



3. The case of a sixty-one-year-old man in whom the entire upper extremity showed involvement is here reported. This is the oldest patient found in the literature. No complaints relative to the disease were elicited upon study of the case.

4. A chronological review of the literature is given.

5. The exact etiology of the disease is unknown. However, a brief summary is given of the several theories advanced to substantiate various authors' concepts as to cause.

6. Gross pathological findings may include thickened bones, bones with irregular contour, bowed long bones, shortened extremities, atrophy of muscles in an involved limb, associated skin changes overlying the osteosclerosis, and impaired vascular efficiency. Gait disturbances result where severe sclerosis has caused impaired joint mobility. Bones encountered by orthopedic surgeons were described as hard and sclerotic. Pathological fractures have not been reported. Joints are rarely involved. The disease tends to involve an entire extremity.

7. In only six cases has there been biopsy study. No autopsy findings have been reported. The microscopic picture is bizarre and does not present a diagnostic picture.

8. The symptoms, in general, are vague, insidious, intermittent, or may be absent entirely as in the authors' case. Prognosis is good and the disease is benign. Physical findings do not point to any symptom complex pathognomonic of melorheostosis. Usually the patient complains of low-grade rheumatic pains in one limb with secondary loss of strength. In severe cases limitation of motion in a joint may develop. The deviation of an involved digit, even at birth, is commonly reported and should put one on his guard for this disease. Associated soft tissue atrophy and bony atrophy is very common. Laboratory findings to date have been negative, but are important in ruling out other conditions.

9. An accurate diagnosis can be made only upon roentgenological examination. The entire skeleton should be studied. A brief differential diagnosis is given.

10. No rational definitive treatment is known. Symptomatic relief has been employed. The results of roentgen ray therapy have not been evaluated.

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# MULTIPLE MYELOMA

## A Review of Ninety-five Proven Cases With Seventy-five Autopsies

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IN RECENT years there have been several extensive articles<sup>1,2,4,5,6,8,9,11</sup> covering the subject of multiple myeloma in its various clinical and hematological aspects. The following report is based on a study of ninety-five proven cases of multiple myeloma. Seventy-five of the cases represent autopsies. The diagnosis in the remaining cases was confirmed by sternal aspiration.

### Age and Sex

Males predominated, there being seventy-one to twenty-four females. In spite of a higher incidence of men in autopsy cases as a whole, the disease appears to be considerably more common in men than in women. The age incidence is shown in Table I.

TABLE I.

Age	No. of Cases
31 to 40 years.....	7
42 to 50 years.....	14
51 to 60 years.....	27
61 to 70 years.....	36
71 to 80 years.....	11

### Bence-Jones Protein

Bence-Jones protein was demonstrated in the urine of twenty-three of fifty-four cases (42 per cent). There appeared to be no relationship between the level of total plasma proteins and the presence or absence of Bence-Jones protein in the urine, as Bence-Jones protein was found in the urine of 40 per cent of nineteen cases with hyperproteinemia and in 33 per cent of twelve cases with normal total plasma proteins. Most of these results were based upon the demonstration of Bence-Jones protein in a single specimen of urine.

### Plasma Proteins

In fifty cases in which the plasma proteins were studied, an elevation of the total proteins ranging from 8.4 to 15.3 grams per cent was found in thirty-two cases (64 per cent). Fractional protein studies in thirty of these cases showed hyperglobulinemia ranging from 3.9 to 12.5 grams per cent in twenty-five cases. Three cases showed a hyperalbuminemia of from 7.3 to 8.0 grams per cent.

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### Serum, Calcium, Phosphorus, and Alkaline Phosphatase

The osteolytic bone lesions are often associated with excessive renal excretion of calcium. Serum calcium levels in thirty-seven cases ranged from 7.9 mg. per cent to 23.7 mg. per cent. The serum calcium was above 11 mg. per cent in twenty-two of the thirty-seven cases (60 per cent). In sixteen cases (42 per cent), the serum calcium was above 12 mg. per cent. There was no correlation between the level of the serum calcium and the level of the serum proteins. Some of the highest calcium levels were associated with normal or low levels, and vice versa.

The serum phosphorus level was either normal or increased in twenty-two of twenty-four cases. In eleven of the twenty-four cases it was elevated (4.4 to 7.8 mg. per cent). Hypophosphatemia associated with hypercalcemia was found in only two of the twenty-four cases. An elevated serum calcium and elevated serum phosphorus was found in six of the twenty-four cases. In all six of these cases there was renal insufficiency. The presence of normal or increased phosphorus levels in cases of multiple myeloma associated with hypercalcemia is always suggestive of renal insufficiency.

In seventeen cases of multiple myeloma where the alkaline phosphatase was studied, only four showed a slight elevation. The greatest elevation was 19 King-Armstrong units. In all four cases there were pathological fractures to account for the elevated alkaline phosphatase.

### Autopsy Findings

The lesions in the bones are commonly soft greyish-white or reddish tumor nodules. The widespread involvement of the bone marrow is shown by the success of sternal aspiration as a diagnostic procedure. The distribution of the bone lesions that could be recognized grossly at autopsy or seen on roentgenograms is shown in Table II. Many of the involved bones were probably not recognized either at autopsy or on roentgenograms.

Microscopically, the tumor nodules are composed of myeloma cells of varying degrees of dif-

TABLE II.

Bone	Per Cent
Spine	80
Ribs	74
Skull	55
Pelvis	39
Sternum	28
Femora	20
Clavicles	11
Scapulae	10
Humeri	10
Radius	1
Tibia	1
Patella	1

ferentiation and pleomorphism, arranged in broad sheets. The typical myeloma cell is indistinguishable from an immature plasma cell. Occasional transitions from immature myeloma cells to typical mature plasma cells may be seen. The myeloma cells seem to arise directly from the reticulum. At times in viewing histologic sections and especially in material aspirated from bone marrows, it may be very difficult to distinguish myeloma from an inflammatory plasmacytosis. We have found that observing the degree of immaturity of the cells, the presence or absence of large compact groups of cells, the presence or absence of a marked macrophagic reaction, and the presence or absence of plasma cells arranged around capillaries or endothelial cells, is of help in distinguishing myeloma from an inflammatory plasmacytosis. Inflammatory plasma cells show a tendency to be arranged around capillaries and are usually associated with a marked increase in macrophages<sup>10</sup> (Fig. 1).

The study of histologic sections alone has led to a confusion of terminology. Such terms as myeloblastic, megakaryocytic, myelocytic, lymphocytic, erythroblastic, et cetera, myelomas are to be found in the literature. We are in agreement with those who do not believe that these varieties exist. All of the cases in our series could be classified under a plasma cell type, although considerable variation in cell size and maturity is often seen in the plasma-cell series.

#### Extrasosseous Involvement

Of twenty-eight livers available for study, ten were involved by the myelomatous process. The cells could be seen to be proliferating either within the portal areas or the sinusoids or both, and resembled a leukemic involvement (Fig. 2). Most of the livers were normal in size, although one weighed 2,650 grams. Of twenty-three spleens examined, nine showed involvement by the myelomatous process. These spleens showed a proliferation of plasma cells within the sinusoids of the red pulp, with crowding out and atrophy of the

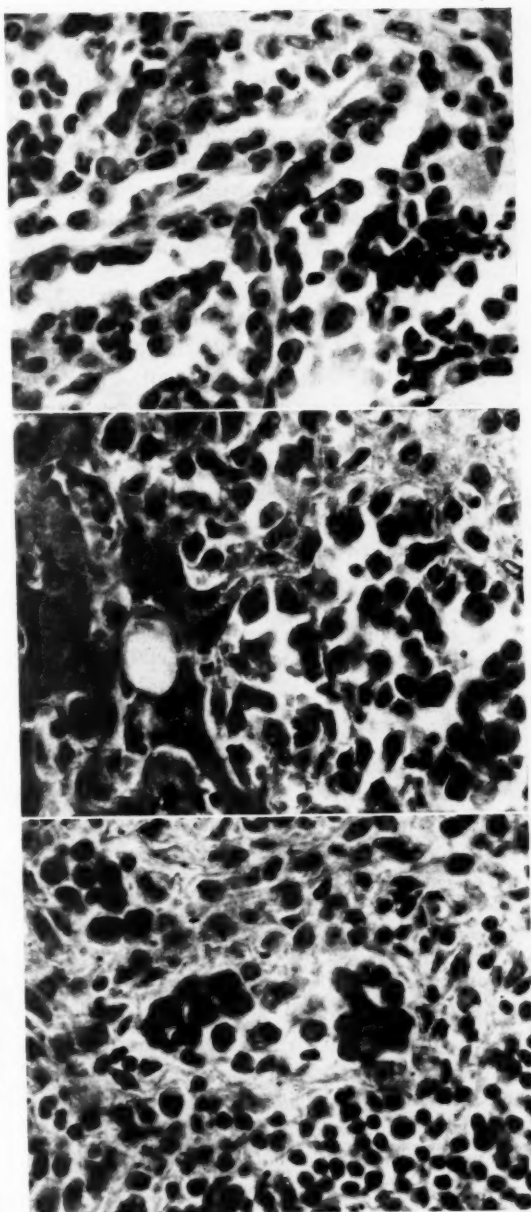


Fig. 1. (above) Bone marrow from sternal aspiration shows inflammatory plasmacytosis. Note the plasma cells clustered along the outside of the capillary.

Fig. 2. (center) Liver shows marked proliferation of myeloma cells in a portal space with atrophy of surrounding hepatic cells.

Fig. 3. (below) Spleen shows proliferation of myeloma cells within the sinusoids.

white pulp in some cases (Fig. 3). Lowenhaupt<sup>7</sup> has described a similar finding. The spleens were usually not large. One, however, weighed 560

grams. Two cases were found with lymph node involvement. The plasma-cell proliferation completely replaced the normal lymph node structure. Two cases were found in which there was a marked proliferation of myeloma cells within the kidney parenchyma involving primarily the cortex and resembling that involvement seen in leukemias. One or more than one of the above mentioned organs may be involved in an individual patient.

#### Renal Disease

Obstruction of the tubules by casts, as described by Bell,<sup>3</sup> was common. In these cases the plasma proteins were high, low, or within normal range. When the plasma proteins were elevated, the increase was usually due to the globulin fraction. Bence-Jones proteinuria may be present but is frequently absent. There was no demonstrable relationship between the Bence-Jones proteinuria, increased serum protein, and presence or absence of tubular casts in this series. Another type of renal involvement which is quite common is calcification of the tubules associated with hypercalcemia.

#### Amyloidosis

One case was found in which there was amyloidosis of the liver, spleen, bone marrow, and voluntary muscle. This patient's serum globulin was 8.0 grams. Tests for Bence-Jones proteinuria were negative.

#### Conclusions

It seems reasonable to believe that multiple myeloma is a diffuse neoplastic proliferation of plasma cells from the hematopoietic reticulum. The frequent involvement of the liver and spleen, as well as the bone marrow, makes it more reasonable to believe that it is a disease of the hematopoietic reticulum and not exclusively a bone marrow neoplasm. It does not seem necessary to sep-

arate plasma cell leukemia from multiple myeloma. Plasma cell leukemia is simply an exaggeration of phenomena seen frequently in multiple myeloma. Careful examination of the peripheral blood will show an occasional circulating myeloma cell in most cases of multiple myeloma.<sup>8</sup>

#### Summary

A study of ninety-five proven cases of multiple myeloma with seventy-five autopsies is reported. Males predominated—seventy-one to twenty-four females. The age in seventy-four cases was over fifty years. Bence-Jones proteinuria was found in 42 per cent of fifty-four cases. Plasma proteins were elevated in 64 per cent of fifty cases. Serum calcium was elevated in 60 per cent of thirty-seven cases. Hyperphosphatemia is usually due to renal insufficiency. Alkaline phosphatase is normal except in the presence of pathological fractures. Proliferation of myeloma cells in the liver and spleen was not uncommon. Obstruction of the renal tubules by casts and calcification of the tubules was a frequent finding. The cytology in all of the cases could be classified as myeloma cells belonging to the plasma cell series. Cytological and histological criteria of separating myeloma cells from inflammatory plasma cells are discussed.

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#### EDUCATION OF THE PATIENT

Education of the patient is a primary function of the tuberculosis institution. One of the greatest obstacles to control of the disease will have been overcome when patients and their families thoroughly understand the facts about tuberculosis and apply what they have learned. Tremendous effort goes into the finding and treating of cases, yet all of this is wasted without the sustained cooperation of the infected individual. As "the person expelling the bacilli," he must learn of his responsibility

to prevent spread; he must learn how to participate in his own treatment, for in the best medical opinion much of the success of the cure is up to the patient. His education should continue until an economically competent and self-disciplined individual has returned to his community and himself become an active participant in tuberculosis control.—A. EDITH FENTON, R.N. (Public Health Nurse, Mt. Sanatorium, Hamilton, Ontario), *Canad. J. Pub. Health*, May, 1948.



## SARCOIDOSIS

### A Clinical and Laboratory Study of Seventeen Cases

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THE PURPOSE of this report is to present certain clinical and laboratory data in a series of seventeen patients seen at the Mayo Clinic, in whom a diagnosis of sarcoidosis (Besnier-Boeck-Schaumann disease) was made, and in whom animal inoculation and cultural studies were performed on specimens of tissue. This problem was undertaken, chiefly, to perform thorough bacteriologic studies of tissue removed for biopsy from these patients in order to investigate further the question of the possible relation of tuberculosis to this entity. The literature on this subject will not be discussed nor reference made thereto, inasmuch as Freiman<sup>1</sup> has recently published an exhaustive survey.

#### Clinical Analysis of Data on Patients

Of the seventeen patients studied, eleven were between the ages of twenty-eight and thirty-seven years at the time of their first admission to the clinic. The youngest patient was fourteen and the oldest fifty-four years of age. Ten of the patients were female; seven were male. Three of them were Negro, and fourteen were white.

The duration of symptoms at the time of the first admission to the clinic ranged from two months to five years. Ages of the patients at the time of the onset of symptoms ranged from fourteen to fifty-three years, with eleven patients showing their first manifestations of the disease between the ages of twenty-three and thirty-six years.

Four of the patients—one white female, one Negro female, and two white males—had a history of tuberculosis in members of their immediate families.

The incidence of clinical evidence of involvement of various organs is shown in Table I. Involvement of the lymph nodes could probably be regarded as occurring in 100 per cent of the patients inasmuch as only a fraction of all the lymph nodes of the body are generally accessible

TABLE I. CLINICAL EVIDENCE OF ORGAN INVOLVEMENT IN SEVENTEEN PATIENTS

Organ	Patients
Lymph nodes	15
Skin	11
Lungs or hilar lymph nodes or both*	9
Eyes†	5
Bones**	3
Spleen	6
Gastrointestinal tract††	2
Liver	2
Parotid glands	1

\*Roentgenologic examination revealed changes in the lungs characteristic of sarcoidosis.

†One additional patient showed unilateral keratic precipitation on ophthalmologic examination, indicative of previous uveitis.

\*\*Roentgenologic examination revealed cystic changes in the small bones of the hands or feet or both characteristic of sarcoidosis.

††In one case there was involvement of the terminal ileum and colon, and in one case there was involvement of the terminal ileum and sigmoid portion of the colon.

to physical or roentgenologic examination. Some of the patients showed localization of the adenopathy to certain groups (for example, supraclavicular, mediastinal) while in others the involvement was generalized.

The cutaneous lesions varied from a few discrete papules to generally distributed infiltrated plaques.

Ocular involvement consisted of inflammatory changes in the uveal tract which are characteristic of sarcoidosis. One patient had uveitis associated with bilateral parotitis, a symptom-complex described as the Heerfordt syndrome.

The gastrointestinal lesions were manifested clinically in one patient by diarrhea, lower abdominal tenderness and vague intermittent cramps. Roentgenologic examination of the gastrointestinal tract revealed ulcerohyperplastic ileitis and ulcerative enteritis of the colon. The other patient complained of loss of weight, diarrhea and bloody stools. Roentgenologic examination in this patient revealed a localized area of contraction of the sigmoid portion of the colon, due to an intrinsic lesion. In both of these patients, localization of the pathologic lesions was confirmed by exploratory laparotomy.

One patient complained of polyuria and polydipsia which could not be explained on the basis of primary disease of the endocrine glands; therefore, it might be assumed that localization of sarcoid lesions in the hypothalamic region and pituitary

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tary gland in this patient caused secondary changes therein, producing the afore-mentioned manifestations of diabetes insipidus.

In two cases, pronounced hepatomegaly and splenomegaly were predominant findings, while splenomegaly was clinically evident in four other patients as well.

### Clinical Laboratory Studies

Hemoglobin determinations or erythrocyte counts or both were normal in all patients. Leukocyte counts were within normal limits in thirteen patients. One showed mild leukocytosis (11,200 per cubic millimeter of blood) and three showed slight leukopenia (3,200, 4,400 and 4,400).

Differential leukocyte counts were recorded in ten patients. Five of the patients had a definite relative monocytosis (9, 17, 14, 9.5 and 14.5 per cent); one of them (with 17 per cent monocytes) also showed eosinophilia ranging up to 14 per cent.

The erythrocyte sedimentation rate (Westergren) was elevated in eleven of thirteen patients in whom this determination was made. Abnormal readings ranged between 23 and 99 mm. per hour.

Serologic reactions for syphilis were negative in all patients except one. This patient, a Negro woman, aged thirty-seven years, had been discovered to have a positive blood reaction six months prior to her admission to the clinic, and she had been given some antisyphilitic treatment(?) at that time. Her serologic test reports at the clinic included a Kline—3-plus, Kahn—negative, Hinton—positive, and Kolmer—negative.

Determination of total serum proteins was done in fourteen patients. One showed mild hyperproteinemia (8.5 gm. per 100 c.c. of serum) and the others were well within normal limits. A total of sixteen albumin-globulin ratio tests were performed; six of these showed reversal of the normal albumin-globulin quantitative relationship, thus indicating the presence of both relative and absolute hyperglobulinemia.

Ten blood calcium levels were measured, nine of which were normal, the other being slightly elevated (11.2 mg. per 100 c.c. of serum). Of seven blood phosphorus determinations, one showed moderate decrease (2.6 mg. per 100 c.c. of serum), the remainder being within the limits of normal.

Intradermal tuberculin tests were performed on

fourteen patients of this group of seventeen. These patients received 0.0001 mg. of purified protein derivative dissolved in 0.1 c.c. of isotonic saline solution intradermally in the forearm. The readings were uniformly negative in all cases. Nine of these patients were further tested with a more concentrated preparation of the same material, 0.005 mg. in the same diluent. Eight of the patients so tested again showed negative results, but the ninth gave a strongly positive reaction and tender axillary lymph nodes developed on the side tested.

### Pathologic Studies

A total of nineteen tissue biopsies were performed at the clinic in seventeen patients. In two of the patients, two separate specimens were removed.

Each biopsy specimen was divided in half at the time of excision. One part was used for pathologic study, while the other part was immediately placed in a sterile container and sent to the laboratory of experimental pathology for study.

Of the nineteen biopsy specimens, eleven were cutaneous lesions, seven were lymph nodes, and one was a section of large bowel wall. The histopathologic diagnosis was sarcoidosis in all cases.

### Bacteriologic Studies

These studies included some or all of the following procedures on each tissue specimen: (1) culture on Herrold's pea extract medium, Herrold's glycerinated medium, and Sesano and Medlar's medium; (2) inoculation of guinea pigs, chicks and rabbits with suspensions of the tissue.

More specifically, sixteen specimens were planted on the pea extract medium, thirteen on the glycerinated medium, and five on the Sesano-Medlar medium.

In sixteen cases, each tissue specimen was inoculated into at least two guinea pigs. In one case, two chicks also were inoculated with each specimen of material, and in five cases each specimen of tissue was inoculated into two rabbits in addition to guinea pigs.

The cultures and animal inoculations of tissue specimens from all the patients in this series showed no evidence of the presence of *Mycobacterium tuberculosis*.

(Continued on Page 1030)

## MODERN CONCEPTS OF TREATMENT IN DISORDERS OF THE LACRIMAL APPARATUS

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WHEN ONE has practiced a specialty in medicine for more than twenty-five years, he is certain to have witnessed many changes in the interpretation of diseases in his particular field, for the practice of medicine is an ever-changing and never exact science.

In the author's personal experience in the small field of lacrimal disease, several noteworthy changes in treatment have been observed and it seems worth while to record some of them.

In congenital stenosis where it was formerly advised either to utilize no treatment at all or to pass giant Ziegler probes after slitting the upper punctum, the modern concept is to pass tiny, 0 or 00, Bowman probes, in the first few weeks or months, with the result that one or two treatments cures a condition which by delay may result in acute dacryocystitis with all its complications, including osteomyelitis of the maxilla, which the author has personally witnessed.

Epiphora used to be managed by slitting the canaliculus even though a real constriction of the lacrimal duct could be demonstrated, with the result that tearing always persisted even though the real pathologic condition in the duct was corrected. Lacrimation due to hypersecretion is now attacked at its source, either by x-ray therapy directed at the gland to diminish its output, or by cocaineization or alcohol injection of the sphenopalatine ganglion to obstruct the nerve supply to the gland, as the tears are frequently increased by irritating lesions in the nose. Epiphora due to senile ectropion requires correction by one of the accepted treatments of lid shortening, but when it is due only to outward displacement of the lower punctum, a few well-placed Zeigler cautery punctures will yield a most satisfactory result.

Hyposecretion as evidenced by keratitis sicca is well managed by closure of the puncta with the actual cautery, whereupon the mucous glands of Krause furnish enough lubrication to keep the cornea moist and comfortable. It is well to seal off only the lower punctum at first as lacrimation may be sufficient to cause tears to stand constantly

in the eyes if too enthusiastic treatment is employed. The upper punctum can always be closed at a later date if necessary.

As a resident on a fine ophthalmic service, the author was taught no surgical procedure on the lacrimal sac other than excision, which of course never cured chronic dacryocystitis as the canaliculi still remained to act as potential sources of infection for the debilitated cornea. Dacryorhinostomy of one form or other has been the greatest advance in this field in the past twenty-five years, and there exists no longer any excuse for any other procedure, provided the passageway from the punctum to the sac is intact. The evidence of any mucocele, no matter how small, in the lacrimal sac is an indication for such therapy, and one should not hesitate even though only one, and that an upper, canaliculus is intact.

Because of its good results in his hands, the author prefers the Dupuy-Dutemps dacryorhinostomy as modified by Chandler, which provides a three-sided tunnel of mucous membrane less apt to be occluded by bony ingrowth as is the case in the original technique. All ethmoidal cells which happen to be in the way should be completely extirpated and care taken not to close the mucous membrane of the lacrimal sac with that lining an ethmoidal cell, as the author once discovered when re-operating on a patient for a colleague whose first plastic procedure was a failure. A large bony window is desirable, at least 10 by 12 mm. or preferably more, as it facilitates the handling of the flaps. Special atraumatic sutures and a small mosquito hemostat as a needle holder are refinements which have been found valuable and time saving. This operation is feasible at any age, as the author has employed it from eighteen months to seventy-two years with complete satisfaction to all.

The history of lacrimal sac surgery was reviewed by illustrations and salient points of each procedure explained. A number of allied affections of the lacrimal apparatus and complications in their treatment were demonstrated by kodachrome slides.

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## TREATMENT OF CARPAL NAVICULAR INJURIES

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**F**RACTURE of the carpal navicular bone is the most common of carpal injuries and is second only to Colles' fractures in injuries about the wrist. As such, it has occupied an increasingly important role in current medical literature. Surgeons writing on the treatment of this fracture repeatedly stress the importance of early diagnosis and early treatment, as healing varies directly with the time interval between injury and onset of treatment. Most fractures are readily diagnosed, but no fracture is overlooked more frequently than fracture of a carpal navicular bone. Every so-called "sprained wrist" should be considered a fracture until proven otherwise.

Fracture of the navicular bone occurs most frequently in young, robust, male adults from a fall on the outstretched hand. There is slight swelling of the wrist, with fullness in the anatomical snuff-box area. Motions of the wrist are slightly limited and painful. There is acute tenderness on palpation over the navicular bone dorsally and just below the radial styloid process. X-rays of the wrist must be taken in three planes, the anterior-posterior, lateral, and oblique. In the anterior-posterior view the hand is held in ulnar deviation. An initial negative x-ray report does not necessarily rule out a fracture of the navicular bone. The injury should be treated as a possible fracture by immediate immobilization and x-rays of the wrist should be taken again in one to three weeks. Immediate and proper treatment results in union in almost all cases, whereas delayed treatment results in delayed healing or non-union.

Fractures of the navicular bone occur either through the tubercle, the waist, or proximal pole. The mechanism producing the fracture is thought to be a transmission of force from the heel of the hand through the capitate bone, which impinges the navicular bone against the distal radial styloid process. Anatomically the navicular bone is thinnest at its midportion, the waist, and therefore, is most readily fractured in this area. The bone occupies a unique anatomical position. It is the longest carpal bone, articulating with five other bones, and lies in both the first and second carpal rows. The latter fact is important, for lateral car-

pal movement which normally takes place between the first and second row of carpal bones is, in the case of a fracture, directed through the fracture line as a shearing force. The articular surface of the navicular bone encases the bone almost entirely in articular cartilage, leaving only a small non-articular dorsal radial ridge for entrance of its blood supply through multiple foramina.<sup>2</sup> These foramina vary in number and position and are rarely seen extending proximal to the midportion of the bone. In fracture through the waist each fragment will receive a blood supply in the larger percentage of cases. In others, the proximal fragment may be devoid of a blood supply, and in fractures occurring through the proximal end of the navicular bone the small proximal fragment is avascular. Because healing of the fracture is dependent on its blood supply, certain predictions can be made regarding healing: fractures of the tubercle, having a good blood supply, usually heal rapidly; fractures through the waist heal in most cases if rigidly immobilized for a period of eight to ten weeks; but fractures through the proximal pole require a longer period of immobilization, even up to eight to twelve months. This time is required for re-establishing blood supply by creeping substitution, just as in other cancellous bone fractures.

Treatment of a fractured navicular bone is by continuous and uninterrupted immobilization in a snug-fitting cast. It has been repeatedly shown that union will occur if immobilization is complete and prolonged. Soto-Hall and Haldeman<sup>4</sup> have placed emphasis on position of the wrist and thumb in plaster. They advise a position of full radial flexion and 30° dorsal flexion of the hand, with full abduction and extension of the thumb. This position undoubtedly aids in securing better fixation, as the navicular fragments are locked together and the disturbing motion of a gliding flexor pollicis longus tendon is eliminated. Immobilization, however, is the most important factor in successful treatment. The snug-fitting cast should extend from the distal palmar crease to just below the elbow and should include the thumb. It should be changed only when it becomes loose. Immobilization is continued until x-ray evidence of union is present.

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## CARPAL NAVICULAR INJURIES—CASPER

When non-union of a fracture has occurred, the treatment of choice is bone-graft surgery. Schneck<sup>3</sup> has advised drilling of the navicular bone, first subcutaneously and then openly. This,

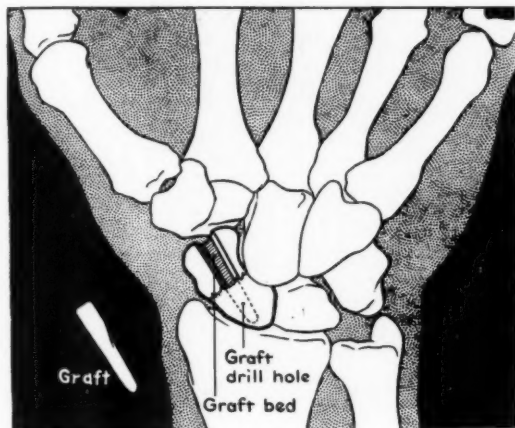


Fig. 1. Drawing of the operative procedure. The graft bed in the proximal navicular fragment is well visualized.

however, has given way to bone grafting, as it has proved more successful in promoting healing. The technique of operation varies. Some surgeons use two or three small grafts; others use a single graft, of varying size, taken either from the radius, ulna, or tibia. Drilling of the navicular bone is not a simple task, and great care must be exercised in placing the drill hole properly so that adjacent articular surfaces are not injured. Bone grafting is difficult, even in experienced hands.

In our surgical procedure a channel is cut with a chisel in the proximal fragment, and the distal fragment is drilled under direct vision. This technique aids greatly in the accurate placement of the graft in the distal fragment. A fairly large graft (shown in the lower left corner of Figure 1) is then introduced into the channel and wedged securely into the distal fragment, impacting the fragments with the bone graft. Following operation, immobilization, as outlined earlier, is carried out until union is demonstrated on x-ray examination.

### Case Reports

**Case 1.**—This illustrates treatment of a fresh fracture by prompt and continued immobilization. This thirty-six-year-old man suffered a fall on his outstretched hand on January 23, 1946, while visiting in another city. He had immediate pain, swelling, and disability in the wrist. He was seen by an orthopedic surgeon who took x-rays and then immobilized the wrist, even though the x-rays

were negative for fracture. This patient was instructed to report to his own doctor on return home for re-examination and further x-rays.

He was seen and examined on January 29, 1946. X-rays taken at this time, six days after injury, showed a



Fig. 2. Case 1. An acute fracture of the waist of the navicular bone (a) six days after injury, and (b) fifteen weeks later, following conservative treatment in plaster.

fracture through the waist of the navicular bone (Fig. 2). Examination revealed acute tenderness over the navicular bone dorsally, as well as in the anatomical snuff-box area, with limited motion. The wrist was immobilized in a plaster cast, incorporating the thumb for ten weeks. Figure 2 also shows the healed fracture on May 14, 1946, some fifteen weeks after starting treatment. Good bony union had been obtained, but there was still some bony atrophy present. He had a good result, having a complete range of painless motion.

**Case 2.**—This illustrates treatment of a fracture with delayed union by bone-graft surgery. This young woman, aged twenty-four, fell on her outstretched hand in the winter of 1941, sustaining an injury to her wrist. She experienced some swelling, pain and disability in the wrist, but thought this was only a sprain and sought no medical help. Her symptoms gradually subsided, and she was able to carry on with her work. In the fall of 1941, her symptoms recurred. Examination at this time revealed tenderness over the navicular bone with pain on radial-abduction of the wrist. X-rays taken on October 6, 1941, showed a fracture of the waist of the navicular bone with widening of the fracture line through absorption with early cystic changes (Fig. 3a). She was treated by bone-graft surgery on October 31, 1941. The navicular bone was exposed through a lateral incision, drilled and grafted with a tibial graft. Figure 3b shows the graft well in place. The graft, however, is slightly small. Gordon Murray<sup>1</sup> states that larger grafts promote healing more readily. Following operation, immobilization was carried out in plaster for four months. X-rays taken in June, 1942, eight months following operation, show excellent bony union (Fig. 3c). Clinically, the patient had a normal functioning wrist.

## CARPAL NAVICULAR INJURIES—CASPERS

**Case 3.**—This illustrates treatment of a fractured navicular bone with established non-union by bone-graft surgery. This eighteen-year-old boy gave a history of having injured his wrist playing football three years pre-

of the wrist. X-rays taken September 26, 1945, show a definite fracture through the waist of the navicular bone, with marked widening of the fracture line, with associated cystic changes in both fragments (Fig. 4a). A



Fig. 3. Case 2. (a) Delayed union in a fractured carpal navicular bone. (b) Bone graft well aligned in navicular bone. (c) Bony union is shown eight months later.



Fig. 4. Case 3. (a) Marked widening of the fracture line with cystic changes seen in a case of definite non-union of a fractured navicular bone. (b) A large bone graft in good position within the navicular bone. (c) Bony union is shown sixteen months following bone-graft operation.

viously. He complained of immediate pain at the time of injury in his wrist and saw his doctor. The wrist was not x-rayed, and the injury was treated as a sprain. One year later, because of persisting disability, this patient sought the help of another doctor, who x-rayed his wrist and immobilized it in a leather brace for a period of five months. Some improvement followed, but his symptoms recurred. He was seen in September, 1946, when he complained of limited, painful, motion in the wrist and stated that cold weather aggravated his symptoms. Examination revealed marked tenderness over the navicular bone, especially in the anatomical snuff-box area. Pain was increased by radial and dorsal flexion

bone-graft operation was performed on October 9, 1945. At operation, the fracture line was curetted of its fibrous tissue, the distal fragment slotted, and the proximal fragment drilled under direct vision. A tibial graft was introduced into the slot and wedged securely into the distal fragment. This graft, as shown in Figure 4b, was large and in excellent position within the navicular bone. Plaster immobilization was enforced for approximately three months and then fixation continued in a leather brace for an additional three months. X-rays taken on February 17, 1947, sixteen months postoperatively, showed good bony union present (Fig. 4c). The patient

(Continued on Page 1052)

## THE SURGICAL MANAGEMENT OF INTESTINAL OBSTRUCTION

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**D**URING THE past decade the concept of the mechanistic factors in obstruction and their treatment as described by Wangenstein have become generally accepted. It has only been during this period that the mortality rate has shown any consistent decline.

This improvement in the mortality of intestinal obstruction is undoubtedly due to a better understanding of the mechanics of obstruction and its relief by gastrointestinal suction; to a better knowledge of the value of electrolytes, blood and plasma transfusions; to a keener awareness on the part of the physician of the importance of early recognition and the institution of prompt medical and surgical treatment; and finally to the exhibition of improved judgment and operative finesse in correcting the obstructive factor and performing aseptic decompressions and anastomoses.

Obstructions of the intestinal tract may be due to mechanical factors or they may be of functional origin. Obstructions of the latter type occur most commonly after operations, after spine injuries and in association with intra-abdominal inflammatory lesions. The treatment of this type of obstruction is largely medical. The most important therapeutic procedures are gastrointestinal suction and intravenous infusions.

Table I shows the relative frequency of occurrence of lesions producing obstruction in a series of 244 cases at St. Mary's Hospital, Duluth, in the decade 1937 to 1948. Adhesions and bands, hernias, tumors and intussusception in that order comprise almost 85 per cent of the factors producing obstruction. The remaining 15 per cent includes such lesions as volvulus, foreign bodies (such as gallstones), diverticulitis, regional ileitis, Meckel's diverticulum, stricture and almost an equal number in which the type of obstruction was not specified.

Obstructions by bands and adhesions, either occurring early after operation, late after operation or without previous operation, are the most frequent cause of intestinal obstruction. In this group of cases, 88 per cent had previous opera-

TABLE I. CAUSE OF OBSTRUCTION

Adhesions and Bands .....	80
Strangulated .....	15
Simple .....	65
Hernias .....	53
Strangulated .....	42
Incarcerated .....	11
Tumors .....	45
Large Bowel .....	39
Small Bowel .....	5
Metastatic .....	1
Intussusception .....	24
Type not specified .....	20
Mixed types .....	22
Volvulus .....	9
Small Bowel .....	3
Gallstones .....	4
Diverticulitis .....	3
Regional Ileitis .....	2
Meckel's diverticulum .....	1
Food Bolus .....	1
Stricture, large bowel .....	1
Hirschsprung's disease .....	1
Total .....	244

TABLE II. AGES

	Males	Females	Average Age in Years
Adhesions and bands	41	39	46
Hernias	21	32	58
Tumors	17	28	62.5
Intussusception	17	7	1.3
Type not specified	9	11	51.5
Mixed types	16	6	51.1
Totals	121	123	45*

\*Excluding intussusception

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tions. Forty-five per cent had a previous appendectomy, and 25 per cent, a pelvic operation.

The most frequent cause of obstructions of the large bowel are neoplasms.

The most frequent cause of obstruction in children is intussusception.

In almost one-third of the cases there was evidence of recurring attacks of obstruction.

Males and females are equally susceptible to acute intestinal obstruction (Table II).

Obstructions by neoplasms affected chiefly the older age groups, the average age being 62.5 years. Obstructions due to bands and adhesions affected the younger adult age group, while the average age of the intussusception group was 1.3 years.

Treatment was limited to medical management in about 25 per cent of the 244 cases. This group of patients included those of minor degrees of obstruction which were relieved by gastrointestinal suction. There were five cases of intussuscep-

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# INTESTINAL OBSTRUCTION—GILLESPIE ET AL

TABLE III. TREATMENT

	Number	Per Cent	Deaths	Per Cent
Medical	63	26	11	17.4
Surgical	181	74	30	16.5
Total	244		41	

TABLE IV. MORTALITY

	Oper. Within 24 hrs.	Oper. Within 48 hrs.	Oper. After 48 hrs.	Totals
Adhesions and bands	17	13	30	60
Hernias	24	13	12	49
Intussusception	12	2	5	19
Tumors	0	0	37	37
Type not specified	0	0	2	2
Mixed types	3	1	10	14
Totals	56	29	96	181
Deaths	4	5	21	30
Per cent	7.1%	17.1%	21.8%	16.8%

tion which were reduced by barium enema. The group also included several whom it was impossible to get into condition for operation and also included a few who entered the hospital in extremis (Table III). Interestingly, the mortality rate for this group was slightly higher than that for the group which was subjected to operation.

The chief factor in the high mortality rate of intestinal obstruction is delay: delay in seeking medical attention and delay on the part of the physician in making a diagnosis and instituting treatment. Those who died on the medical service without benefit of surgery had been ill an average of over eight days before medical treatment was instituted. On the surgical service, of those who succumbed, the average patient had been ill for 13.6 days before operation was performed.

The influence of length of illness before operation on the mortality rate is illustrated in Table IV. Of fifty-six patients who were operated upon within twenty-four hours of the onset of illness there were four deaths, or a mortality rate of 7.1 per cent, whereas within forty-eight or after forty-eight hours the mortality rate rapidly increased to 17.1 per cent and 21.8 per cent, respectively.

It is obvious that a continuing improvement in the mortality of intestinal obstruction demands early accurate diagnosis and the prompt institution of treatment. All too frequently when a patient with acute obstruction is admitted to the hospital, the doctor is satisfied with an admitting diagnosis of "acute abdomen" or at best one of "acute obstruction," no great attempt being made to diagnose the type or level of obstruction or whether it is a simple or strangulating obstruction.

Occasionally acute appendicitis, biliary tract disease, pancreatitis, perforated ulcer and acute ureteral obstruction may simulate acute intestinal obstruction.

The triad of symptoms characteristic of obstruction are colicky pain, vomiting and distention. The character and intensity of these symptoms will depend largely on the degree and level of the obstruction. High small bowel obstruction is characterized chiefly by profuse vomiting and, if the level of obstruction is below the duodenum, colicky upper abdominal pain. Low small bowel obstruction is characterized by the sudden onset of colicky abdominal pain and borborygmi heard at the height of the colic. One should keep in mind that in the early hours of obstruction distention is not present. Yellow-brown, sometimes foul-smelling vomitus signifies low late ileal obstruction.

With colonic obstruction there is a more gradual onset of colicky pain. Abdominal distention becomes marked only with complete obstruction. Vomiting is not a striking feature. Because of the competency of the ileocecal valve (75 per cent), acute obstructions of the colon are largely of the closed loop type.

One of the stumbling blocks is the early differentiation between simple and strangulation obstruction. This is important because the latter group is associated with a much higher mortality. Because of the inability to distinguish strangulation from simple obstruction, some surgeons take the stand that all acute mechanical obstructions should be regarded as strangulating until proved otherwise. The surgical staff of the Massachusetts General Hospital follows the policy of immediate operation, after replenishing fluids, upon all patients with acute intestinal obstruction who are seen within twenty-four hours. Even those that are seen within forty-eight hours after the beginning of the illness are operated upon as soon as the electrolytes, plasma and blood are replenished.

In this connection, Moses makes a strong point in his insistence that the distention should be relieved and that the physiological alterations should be corrected before the patient is subjected to operation.

External hernias are the most frequent cause of strangulation obstruction and as such should offer no difficulty in diagnosis (Table V). As evidence of this is the relatively low mortality rate associated with external hernias. An exception to



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this is femoral hernia where the mortality rate was 40 per cent.

The characteristic clinical picture is a patient with a tender tense mass at the site of herniation associated with signs and symptoms of intestinal obstruction.

It is the lesion within the abdomen producing obstruction that is associated with difficulties in recognition, differential diagnosis, and consequent delay in treatment. In this type of case it is important not only to establish a diagnosis but to estimate the degree, type and level of obstruction. In strangulation obstruction the colicky pain is more sudden in appearance, more intense and continuous. The patient tries to assume a position of relief. There is a more rapid progression of symptoms. The abdomen becomes tender. Shock may supervene early. A tender mass on abdominal or pelvic examination may be detected. A diagnostic paracentesis of the abdomen can be of great value. An 18-gauge needle is inserted through the abdominal wall in an upward oblique direction to either side and slightly below the navel. The aspiration of a few cubic centimeters of bloody fluid will clinch the diagnosis.

The x-ray evidence of obstruction is most important. Only too often the physician fails to utilize this diagnostic aid (Table VI). A large scout film of the abdomen is most helpful. Other exposures which may be of aid can be taken in the erect and in the lateral positions. The particular information which an x-ray examination may elicit is the degree of intestinal distention, the location of distended loops and whether air exists in the peritoneal cavity and colon.

In the event that the diagnosis is not immediately evident and a policy of watchful waiting is adopted, it is well to see and examine the patient at intervals of a few hours. The abdomen should be carefully re-examined, the general condition of the patient should be appraised, and it may be desirable to repeat the x-ray pictures. During this interval, of course, the preoperative treatment of the patient can and should be initiated.

## Preoperative Treatment

It is safe to say that gastrointestinal suction should be started immediately in all cases of obstruction of the small bowel. The type of tube to be used is a Levine lead-tipped duodenal tube or the Miller-Abbott, or one of its modifications. The Levine tube will take care of all high intes-

TABLE V. MORTALITY IN VARIOUS GROUPS

	Total Cases	Surg. Trt.	Mortality
Adhesions and bands	60	7	11.6%
Hernias			
Inguinal	34	1	3 %
Ventral	5		
Internal			
Femoral	10	4	40 %
Intussusception	19	2	10.5%
Tumors	37	11	30 %
Type not specified	2	1	50 %
Mixed types	14	4	30 %
Totals	181 oper.	30 deaths	

TABLE VI. X-RAY EXAMINATIONS

	Positive	Negative	None Taken
Adhesions and bands	49	10	21
Hernias	5	0	48
Tumors	29	3	13
Intussusception	8	0	13
Mixed types	12	3	7
Type not specified	16	2	2
Total	114	23	107

tinal obstructions as well as most of the cases of low small bowel obstruction where its use is resorted to before the obstruction becomes marked.

In the low ileal obstructions, the Miller-Abbott tube or one of its modifications should be resorted to especially in the case of marked distention. Various methods and contrivances have been suggested to insure the rapid passage of the tube through the pylorus and down the intestine. Its use is not without some danger.

Gastrointestinal suction is not indicated in large bowel obstruction unless there is an incompetent ileocecal valve with regurgitation and consequent distention of the lower ileum.

Granted that the case is one of intestinal obstruction, supportive treatment should be started at once. Morphine or one of its derivatives should be administered for relief of pain. In acute high intestinal obstruction, saline infusions should be administered. In low obstructions saline solutions have no specific merit. Where dehydration is present, as indicated by thirst, dryness of the skin, loss of turgor, and low urinary output, saline and glucose solutions should be administered in sufficient quantities to insure a urinary output of 700 to 1,000 c.c. daily. In low bowel obstruction and with great distention, the too liberal use of saline may result in greater accumulations of fluid in the obstructed gut; overchlorination may result in salt retention and edema.

If shock is impending or present, such as one sees in strangulation or in late simple obstruction, plasma and blood transfusions should be administered in adequate amounts.

The two most important measures in the preoperative treatment of a patient with intestinal obstruction are the administration of adequate fluids (electrolytes, plasma and blood) and gastrointestinal suction. These should be started early and should be continued throughout the operation and into the postoperative period until normal motility has been established.

### Operative Treatment

The three cardinal principles in the successful treatment of intestinal obstruction are the institution of gastrointestinal suction, the administration of fluids in the proper amounts, and an operative procedure performed at an opportune time and wisely selected and executed in a skillful manner.

The choice of anesthesia is important. Spinal anesthesia is ideal in the good-risk patient but should not be used in the face of shock, in the patient who is very anemic or in the patient of advanced years. General anesthesia, skillfully administered, is preferred for these patients.

Local infiltration in the poor-risk patient where a minor procedure is contemplated is sometimes indicated.

The incision will depend largely on the level of obstruction. For exploration a midline lower abdominal or mid right rectus incision should be made. In the case of low obstruction of the small bowel, an incision on either side of the midline is preferred. If a mass can be palpated, a vertical incision over the mass is advantageous. In the case of obstruction of the pelvic colon, an incision parallel to and over the transverse colon is preferred. In the case of an obstruction of the right colon, a vertical incision on the left side of the abdomen is often indicated.

When the abdomen is opened, its contents should be inspected insofar as possible. Evisceration is to be avoided. Patients with prolonged acute bowel obstruction do not tolerate extensive manipulation. The ideal is to find the obstructing element directly, carefully divide the band or release the bowel. As a general rule, the early obstruction is corrected more easily and with less danger to the patient. The operative correction of obstruction in the late stages is more apt to be associated with more serious consequences to the patient and will require better surgical judgment and more complicated surgical maneuvers.

The operative treatment of acute intestinal obstruction depends on the nature of the obstruction

and the pathological changes in the bowel wall. In the case of strangulation the question of the viability of the bowel must be judged. If the bowel is viable, the strangulation only is relieved. If the gut is nonviable, it must be excised. After release of the obstruction, time should be allowed for the circulation of the obstructed segment to return. To encourage this, the bowel should be covered with hot moist sponges. Whether the bowel is viable will be determined by its color, contractility and the pulsation of its vessels. If damage to the circulation is slight, consideration should be given to the performance of an enterostomy proximal to the strangulated area. In the event that a Miller-Abbott tube is already decompressing the small bowel, enterostomy will not be indicated. In the case where the bowel is nonviable, primary resection with aseptic end-to-end anastomosis is the procedure of choice. The danger is peritonitis. If there is a question about the anastomosis and the bowel is not adequately decompressed, an enterostomy proximal to the anastomosis is indicated, especially in low ileal obstructions.

Gastrointestinal suction has largely done away with the need of enterostomy; yet, at times there will be a clear indication for its employment.

With the development of aseptic anastomoses, exteriorizations are being abandoned. However, exteriorization operations sometimes will be indicated in low ileal and colonic obstructive lesions.

Entero-enterostomy will sometimes be indicated in the case of massive adhesions and an occasional case of inflammatory obstruction, as in regional and multiple jejunitis and in some cases of acute obstruction due to tumor.

In acute obstruction of the right half of the colon where there is an incompetent ileocecal valve, ileotransverse colostomy will be the operative procedure most commonly employed. Colostomy, and less frequently cecostomy, will sometimes be indicated. In cases of volvulus of the cecum and of the ascending colon where gangrene is impending, primary resection or exteriorization is usually performed. In lesions of the left half of the colon, transverse colostomy will be indicated. In volvulus of the sigmoid, if it is not too far advanced, untwisting of the volvulus and decompression of the segment by the use of a rectal tube is useful. When gangrene is present, exteriorization is advised.

The surgical maneuvers to correct rarer types

of obstruction will depend on the place and the type of the obstructing factor in the particular case.

### Postoperative Treatment

Postoperative treatment begins when the patient is still in the operating room. The most common complications are shock, atelectasis and aspiration pneumonia, peritonitis, wound infection, and thrombophlebitis.

In a patient who is operated upon early and after adequate preparation, postoperative complications occur infrequently. Conversely, in the group that is operated upon late and without sufficient preparation, complications that may be lethal can be frequently expected.

Postoperative management is largely a continuation of preoperative treatment. Gastroduodenal suction should be started when the patient enters the hospital, continued through the operation and into the postoperative period until normal motility is re-established.

Intravenous fluids also should be started in the preoperative period, especially if there has been excessive vomiting with electrolyte depletion and dehydration, or in the case of impending shock. This fluid administration should be continued throughout the operation and into the postoperative period until recovery is well advanced.

Before the anesthesia is discontinued, the pharynx and the trachea should be thoroughly aspirated.

The patient should not be hurried from the operating room. Impending or actual shock should be combatted with sufficient intravenous fluids (blood or plasma). The pulse and the blood pressure should be stabilized. In some cases it may be desirable to transport the patient back to his room in a tilted (head down) position and, when transferred to his bed, kept in this position by elevating the foot of the bed. He is then maintained in that position until fully awake or until the blood pressure is stabilized.

Oxygen administered by the Boothby mask may be indicated, especially if cyanosis is present.

Penicillin administration, if not begun during the preoperative period, can be started by intramuscular injection in adequate doses.

Catheterization every six to eight hours may be necessary if the patient is unable to void. Fluids should be administered in sufficient quantities to insure an excretion of 800 to 1,000 c.c. of urine daily.

TABLE VII. SURGICAL MORTALITY, SMALL BOWEL OBSTRUCTION

	Total Cases	Deaths
Adhesions and bands	60	7
Hernias	49	
Inguinal		1
Femoral		4
Intussusception	19	2
Tumors	4	3
Mixed	13	
Volvulus		1
Regional ileitis		1
Gallstone		1
Type not specified	1	0
Total	146	20 (13.7%)

Early ambulation should be encouraged.

Enemas should not be given until all danger of peritonitis is passed. Usually the bowels will move spontaneously some time after the fourth postoperative day.

Atelectasis of a minor degree will usually clear up spontaneously if the patient is encouraged to change his position frequently and if he is encouraged to cough and expectorate. Collapse of a major lobe or of an entire lung will require bronchial aspiration. The danger of aspiration pneumonia will largely be eliminated by thorough gastrointestinal suction.

The treatment of peritonitis is largely by gastrointestinal suction.

Wound infection will become evident by fever and local tenderness, swelling and inflammation.

Thrombophlebitis will be largely combatted by elevation of the foot of the bed in the early postoperative period, and, later, by early ambulation. When phlebothrombosis or thrombophlebitis is present, consideration should be given to heparin and dicumarol administration and, in some cases, to bilateral ligation of the deep femoral veins.

In the case of other less common complications, appropriate treatment should be instituted early.

### Mortality

In this series there was an operative mortality of 16.5 per cent. If one considers lesions of the small bowel only, the mortality rate was 13.7 per cent (Table VII). When strangulation obstruction is present, the mortality rate is substantially increased. The over-all mortality rate in the non-strangulated group was 14 per cent compared to 25 per cent in the strangulated group.

Table VIII, taken from Moses' article, shows the mortality rates in reported series of acute obstructions of the small bowel.

The chief causes of death are peritonitis, shock, and pulmonary complications. This holds true not

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TABLE VIII. MORTALITY RATES IN REPORTED CASES OF ACUTE OBSTRUCTION OF THE SMALL INTESTINE

Year	Author	Number Cases	Mortality Per Cent
1930	Holden		19.0
1938	Scudder, Xwemer & Whipple	2150	24.0
1938	Wangensteen	157	17.9
1940	Schlicke, Barges & D'xon	133	21.8
1940	McKittrick and Sarris	136	20.0*
1942	Dennis and Brown	48	13.3
1943	Dennis and Brown	110	15.5
1944	Dennis	53	15.1
1945	Moses	118	8.5*
1946	Hunt	41	7.3
1946	Moses	223	6.4*
1949	St. Mary's Hospital, Duluth	146	13.7

\*Hospital mortality

TABLE IX. CAUSES OF DEATH

	No Surgery	Surgical	Totals
Peritonitis	14	27	41
Shock	12	5	17
Deaths in Operating Room	0	4	4
Coronary occlusion	2	1	3
Pulmonary embolus	1	0	1
Anuria	1	0	1
Pneumonia	0	3	3
Unknown	0	1	1
Totals	30	42	72

only in the surgical group but also in those who die under medical treatment. Table IX shows the causes of death in a study of the autopsy records of St. Luke's Hospital, Duluth, between the years 1935 to 1948. Peritonitis and shock comprised 73.8 per cent of the surgical deaths and 86.6 per cent of the medical deaths.

## Conclusions

Based on the above clinical and pathological studies of intestinal obstruction, the following conclusions can be drawn:

To expect a continuing improvement in the mortality rate, the patient must somehow be in-

duced to seek medical attention earlier in his or her illness.

The physician's responsibility is to make an early, accurate diagnosis and begin treatment without delay. The two most important procedures in treating intestinal obstruction are gastro-intestinal suction and the administration of intra-venous fluids.

The surgeon's duty is to see that the patient is properly and adequately prepared, and that the operation is performed at a judicious time and in a skillful manner.

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## INSURED FOR HEALTH

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IN A LITTLE over 100 years, life insurance has become an important asset in nearly all countries. The exceptions are those countries where, because of such elements as unstable health and unfavorable economic conditions, life insurance is often unavailable, despite the fact that the people of those countries have the greatest need for its benefits. What has been accomplished in public acceptance of life insurance remains to be done in the field of health insurance. Certainly, the reasons for health insurance are as logical and valid as those for family protection after the death of the breadwinner.

A stable economic organization and a relatively high level of general health are essential to both types of insurance. Perhaps one reason that health insurance has not been so widely accepted as it deserves is that the principles of an ordinary life insurance policy are fairly simple and easily understood. The policy holder knows that a payment will be made to his beneficiary on his premature death, and because he is glad to be alive he is willing to pay the premiums as they come due.

Secondly, life insurance policy holders realize that if they pay their premiums until they reach a fairly advanced age, and leave the dividends to the credit of the policy to accumulate at interest, the cash value of the policy, upon which the size and type of all annuity payments depend, will finally equal or even exceed the total of the premiums paid. During the first years, the value of an insurance policy rests upon the certainty that one's family is protected financially in the event of the breadwinner's death or total disability. That certainty is, for the time, of more value than the amount of the premiums paid. For a considerable part of the time that the policy is in force, the death benefits are much greater than the amount of the premiums. It is man's longevity, and the earnings of the moneys invested by insurance companies operating under a stable economic system, that permit life insurance to function satisfactorily.

Thirdly, there is obviously no question about whether or not a person is dead. There is lit-

tle chance of evasion on the part of the policy holder, and we practically never hear of an insurance company failing to pay death benefits.

The reasons for maintaining health insurance are just as logical as those in favor of life insurance. A person who maintains his health and earning power should be glad to pay premiums without getting any return from them, so long as health and earning power continue. His power to earn money is a much greater financial advantage than his possession of insurance. He should have a great deal of satisfaction in knowing that as long as he does not need medical care and retains his earning power, his premiums are helping individuals and families for whom illness has created a crisis. Similarly, the home owner who pays fire insurance premiums would prefer to make life-long payments rather than suffer one disastrous fire.

The need for educating the general public regarding this point of view was shown recently, when several college students on vacation were heard discussing health insurance and college health services. Usually colleges include a health service fee as part of the total tuition charge. Thus these fees constitute a type of health insurance. The students felt they had been deprived of something because they had not received in medical services the equivalent of what they had paid as a health service fee. They evidently lacked the ability to appreciate the principles of health insurance. A more thorough understanding of these principles would have convinced them that they were the gainers in the transaction, since they remained in good health and did not need the services for which they paid.

There are some people who prefer to budget their own medical and hospital needs, independently of any group. By far the larger number, however, cannot afford to set aside sufficient funds from their income, during the early years of budgeting, to protect themselves and their families against the catastrophe of serious illness or injury. The amount of money necessary to budget possible future medical and hospital costs will be less if the insurance principle is adopted. The

annual payments by individuals represent the *average* health costs for the group. A few subscribers each year have unusually heavy costs, while many make little or no demand upon the joint fund.

Furthermore, health insurance will be much less expensive for everyone if each individual subscriber is willing that slight or minor ailments be excluded from benefit payments. This principle has a precedent in the \$50 deductible type of automobile insurance. Health insurance plans are striving to make their settlements fair and equitable, and it would be uneconomical to make payments for slight illnesses, the cost of which can be easily financed by the individual. The cost of such slight illnesses can usually be included in the living costs that the family regularly meets. These costs will rarely exceed those of entertainment or recreation. It is of course important not to neglect slight ailments, which might become major ones if not detected and treated in the early stages. But the cost of medical care for these minor needs can and should be borne, in the majority of cases, by the individual or his family, without recourse to his health insurance.

The success of any insurance plan depends upon everyone playing the game fairly. People who run up unnecessary bills, merely because they have insurance to pay the bills, are defeating the most essential principle of sickness insurance, which is medical care for unusual, unexpected, long-lasting or exceptionally costly illness. Good medical care can be provided satisfactorily in such an event only if everyone "plays fairly." In insurance of any type, the rates go up sharply when those concerned abuse the services provided. The public, innocent and guilty alike, pays for all demands, necessary as well as unreasonable, under the insurance principle.

A very much greater proportion of those insured for health will require insurance aid than those covered by life insurance. Death is a very much smaller hazard than illness. On the other hand, sickness benefits—in the majority of cases—are much smaller than death benefits.

We have stated that the basic principles of health insurance are very similar to the basic prin-

ciples of life insurance. They are also quite similar to the basic principles of satisfactory living. Education and training in recognizing the significance and value of these basic principles should begin in early childhood and should be carried on through the grades and high school. The child needs to learn that team-work, fair play, and group effort apply to health insurance in the same way that they apply to other joint projects for a common good. Health insurance, covering especially catastrophic or prolonged illness, should be a part of every citizen's economic planning. Possession of such insurance actually bolsters health, because it gives people the feeling that, if sickness comes, financial help is always at hand.

Fifty-five million Americans have already protected themselves in this manner, and this number, fortunately, is increasing every month. All these people have a vital personal interest in the success of voluntary health insurance. They also share the hope that, as experience is gained, the benefits of health insurance may be improved and enhanced. What these fifty-five million have attained should not be destroyed in the interests of a much smaller group that cannot or will not plan for the health protection of themselves and their families. This latter group obviously does not include those now receiving or in need of public assistance because of old age, disability, and other conditions of this general nature.

It is believed by many that if health insurance for individuals and groups were to be made compulsory, the compulsory features would cause the insured groups to lose their initiative and would hamper individuals in developing group co-operation, team-work and fair play as these principles apply to health insurance. A compulsory health insurance system might foster the type of thinking illustrated by the college students who felt that they had not received any benefit from their health service fees.

Certainly there are few misfortunes as severe as a long, disabling illness of the breadwinner of a family. Insurance against such a calamity is becoming recognized as a worthwhile investment. Under the effective operation of the insurance principle, those whom misfortune overtakes will be cared for, and all will be assured of adequate protection.

# HEMOPERICARDIUM WITHOUT RUPTURE OF THE HEART FOLLOWING DICUMAROL THERAPY FOR MYOCARDIAL INFARCTION

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THE EFFECTIVENESS of dicumarol in preventing thromboembolic phenomena in patients with acute myocardial infarction has been repeatedly confirmed.<sup>11</sup> The hazard of hemorrhagic manifestations as a result of anticoagulant therapy has prompted careful clinical and experimental studies. Nonfatal hemorrhage has been frequently recorded but serious hemorrhage has been rare.<sup>11</sup> In experimentally produced myocardial infarction in dogs, dicumarol did not increase hemorrhage into the myocardium and healing of the infarction was not delayed.<sup>1,3,7</sup>

That dicumarol might increase the danger of ventricular rupture has been feared<sup>9</sup> but no reports of hemopericardium have appeared where anticoagulant therapy could be considered responsible. The following case is reported as an instance in which excessive hypoprothrombinemia induced by dicumarol may have been an etiological factor in the production of hemopericardium.

## Report of Case

The patient, a fifty-eight-year-old Polish-American furrier, was admitted on January 2, 1948, for repair of a right inguinal hernia. The cardiovascular history was negative.

The physical examination was negative except for a right indirect inguinal hernia and mild hypertension (Blood pressure: 178/98 mm. Hg).

The urinalysis, erythrocyte sedimentation rate, hemoglobin concentration, serum bilirubin concentration, prothrombin time, and electrocardiogram were normal. The blood Kahn test was negative. A teleroentgenogram showed slight left ventricular hypertrophy and mild ectasia of the aorta.

Because of fatty food dyscrasia, a cholecystogram was performed on January 5, 1948. One hour after the intramuscular injection of pitressin (1 c.c.) the patient developed retrosternal pain with dyspnea and perspiration. The blood pressure was 106/70 mm. Hg and pulse rate was 52 per minute. The heart sounds were distant. An electrocardiogram showed depression of ST-2 and ST-3, small R waves in CF-2 and CF-4, and high take-off of the ST segment in CF-2, CF-4 and CF-5. A diagnosis of acute myocardial infarction was made. On

TABLE I. DAILY PROTHROMBIN CONCENTRATION AND DICUMAROL DOSAGE

Date	Prothrombin Time In Seconds		Prothrombin Concentration Per Cent	Dicumarol Mg.
	Control	Patient		
1/ 2/48	13	14.1	78	
1/ 7/48	14	16.6	55	200
1/ 8/48	13	20.9	29	0
1/ 9/48	13	21	29	75
1/10/48	13	21.1	29	150
1/11/48	12.8	38.8	10.9	0
1/12/48	13	26	19	50
1/13/48	13	32	15.8	50
1/14/48	14	34	13.5	0
1/15/48	14	44.1	9	0
1/16/48	14	44.7	8	0
1/17/48	14	30.8	15.8	0
1/18/48	14	22.3	27	0
1/19/48	14	33.4	13.8	0
1/20/48	13	24.5	21	50
1/21/48	13.5	31.7	15	50
1/22/48	14	40.6	10.4	0
1/23/48	14	40	10.5	0
1/24/48	14	34.8	13	0
1/25/48	14	30.1	16.2	50
1/26/48	13	26.3	18.8	50
1/27/48	14	63.3	7	0
1/28/48	14	66.5	6	0
1/29/48	14	132	0.5	0

January 7 the prothrombin concentration was 55 per cent and dicumarol therapy was begun.

The blood pressure remained about 96/68 mm. Hg, and the heart sounds continued to be faint. He developed slight fever, mild leukocytosis and an increased erythrocyte sedimentation rate. Serial electrocardiograms showed changes considered diagnostic of an anterior myocardial infarction (low voltage QRS in all limb leads, negative T-1, absent R waves in the precordial leads, and negative T waves in the precordial leads). A teleroentgenogram on January 27, 1948, showed increase in the heart size with bulging along the left border.

The patient proved to be more sensitive to dicumarol than usual. On several occasions the prothrombin concentration dropped to very low levels (Table I), but he exhibited no bleeding tendencies, and no vitamin K was given. Liver function studies were performed because of the sensitivity to small amounts of dicumarol. The bromsulfalein retention after forty-five minutes on January 28 was 19 per cent. A cephalin-cholesterol flocculation test on the same day was 1-plus in twenty-four hours and 2-plus in forty-eight hours.

At 9:00 a.m. on January 29 he was dyspneic and pale. Crepitant râles were heard at the right base and the neck veins were distended. The liver was not palpable and no edema was present. One hour later he became more severely dyspneic, apprehensive and cyanotic. His blood pressure was 40/0 mm. Hg. The pulse was weak and thready. Examination of the chest showed bilateral crepitant and sonorous râles. The heart sounds could not be heard. The symptoms and signs became steadily worse and he died at 1:50 p.m. The prothrombin

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concentration, determined at 9:00 a.m. on the day of death, was reported after the patient died as 0.5 per cent.

The description of the significant portions of post-mortem examination was as follows:

The pericardial cavity contained 800 c.c. of dark red blood. Numerous soft, dark red, fibrinous adhesions were present between the visceral and parietal pericardium.

A thin-walled aneurysmal dilatation, which measured 7 cm. in diameter, was located on the anterolateral surface of the left ventricle. The wall of the ventricle in the dilated area was 4 mm. thick. On the endocardial surface of the aneurysmal dilatation was a layer of reddish tan thrombus which measured up to 1 cm. in thickness. The anterior descending branch of the left coronary artery showed yellowish intimal thickening with complete occlusion by a thrombus 2 cm. from its origin. No gross laceration of the myocardium could be found, and "very careful and extensive search failed to reveal any small rupture of the ventricular wall or blood vessels of the heart."

Sections of the aneurysmal dilatation examined microscopically showed changes of a fairly recent infarction with early stages of healing. Microscopically no defect was found in the ventricular wall and no diffuse infiltration of blood could be found.

The liver sinusoids were congested with blood. The central portions of the liver cell cords showed extensive atrophy with vacuolization, loss of normal staining reaction and diffusely scattered polymorphonuclear leukocytes. The changes in the liver indicated passive congestion. Since the liver cell cords could be followed down to the central veins, the process was considered to be recent.

### Discussion

The great majority of cases with hemopericardium secondary to acute myocardial infarction are associated with complete rupture of the wall of the heart, but partial rupture may occur. Krumbhaar and Crowell,<sup>8</sup> in a review of 654 cases of spontaneous rupture of the heart, found sixteen instances with partial rupture although "reports of partial ruptures were for the most part discarded." Ten of these sixteen patients had rupture of septa or papillary muscles. Three of the patients showed partial rupture from the epicardial surface that did not reach the ventricular chamber, and all of these had hemopericardium. Parkinson and Bedford,<sup>10</sup> Laignel-Lavastine et al<sup>6</sup> and Comes<sup>4</sup> each reported one case of partial rupture of the myocardium with hemopericardium. Nordmann<sup>8</sup> described a hemorrhagic infarction with a small defect in the epicardium and subsequent hemopericardium. Beresford and Earl<sup>2</sup> recorded two cases in which there was an epicardial laceration and hemopericardium but with an intact endocardium. The

same authors state the hemopericardium may occur without visible rupture in hemorrhagic infarction, but they do not substantiate this concept with case reports or references. No instance of hemopericardium following acute myocardial infarction without laceration of the myocardium could be found in the literature unless Nordmann's case represents such an occurrence. In twenty-eight cases of hemopericardium following myocardial infarction, reviewed from the autopsy files of the Department of Pathology, University of Minnesota, macroscopic rupture of the ventricle was evident in each instance.

The case presented in this report of hemopericardium without laceration of the myocardium is evidently unique. The exact source of the hemorrhage is obscure. Hemorrhagic extravasation into the myocardium was not demonstrated. The gradual development of symptoms of cardiac tamponade indicate that bleeding occurred slowly. The defective hemostatic mechanism may have precipitated the bleeding and almost certainly permitted massive hemorrhage to occur. That the prolonged prothrombin time produced by dicumarol was deleterious seems probable.

### Summary

1. A case is reported of hemopericardium without rupture of the myocardium, following an acute myocardial infarction.
2. Because this is a unique event and the patient had extreme hypoprothrombinemia, it is suggested that dicumarol was of etiological significance in production of the hemopericardium.

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## THYROID ADENOMATA IN CHILDREN

### Review of the Literature and Report of a Case in a Nine-year-old Boy

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IT IS generally agreed that adenomata of the thyroid gland in children are quite unusual. The voluminous literature on nontoxic nodular goiter is replete with phrases such as: adenomatous goiter "occurs with increasing frequency with age," "is rarely seen before puberty," "begins at puberty or later," and the like. To arrive at any reasonably precise estimation of this incidence at the present time is well-nigh impossible, however. Geographic influences on the entire goiter problem and on statistical incidence of all types of goiter are well known and need no elaboration. Too, iodine prophylaxis has had a profound but as yet incompletely assayed effect on statistical incidences.<sup>5</sup>

Very extensive surveys of the geographical incidence of simple or so-called endemic goiter in both children and adults were carried on during the 1920's by many investigators. Only a few of these reports made any mention of the incidence of nodular goiter in the younger age groups. Olsen, for instance, in 1929, in a study of endemic goiter in Tennessee, a state at the edge of the "goiter belt," reported the results of examinations of 65,148 white and colored boys and girls in the schools. Among 1,049 children aged ten or under, no adenomatous goiters were found. There were forty-eight cases of adenomatous enlargement in a total of 12,487 children aged fourteen or under. Interestingly, thirty-four of these latter forty-eight adenomatous goiters were in the group of 5,560 white girls aged fourteen or under.

To quote only one of a multitude of European observers working on the problem of the incidence of goiter, Wegelin, reporting 696 routine autopsies during the year 1913-1914 at the Berne Pathological Institute, in a highly endemic goiter region, found 445 (63.9 per cent) to have macroscopically visible nodules. Of these, two were in children aged ten or under. Rice, in similar post-mortem studies of the thyroid glands of patients dying from causes unassociated with the thyroid (in Minnesota, another area of high endemicity), found nodules in the glands in 234 (47.4 per cent) of 493 cases examined. Of these,

one was found in a patient aged ten or under, and this was a 2 mm. colloid nodule. He included all nodules visible macroscopically on gross serial section. Rice found nodules in 2 to 3 per cent of autopsies on individuals at puberty, and that the percentage incidence of nodules roughly paralleled the figures for age in the older groups. Jaffe studied 1,000 thyroid glands at autopsy at Cook County Hospital in Chicago. The youngest person presenting a nodose goiter was a white girl aged twelve, then there was a colored boy of fourteen, and a white boy of fifteen. All of these observations were made in endemic regions, before the use of iodine prophylaxis.

Schlesinger et al, in another post-mortem study, in New England, a non-goitrous region, reported that of a total of 1,371 autopsies there were nodules in the thyroid gland in 112 (8.2 per cent). However, they included in their study only those with nodules 1 cm. or larger in diameter, on the grounds that they wished to include only those which might have been palpable clinically. None occurred in fifty-two patients in the age group up to nine years of age, and only one (a female), in the thirty-three patients in the age group ten to nineteen years.

It can thus be seen that clinical experience with nodular enlargement of the thyroid gland in children might well be very limited, even in goitrous regions in the absence of the modifying factor of iodine prophylaxis. Cattell stated in 1933 that in his clinical experience he had seen only three instances of adenomatous goiter in children. Kennedy reported in 1940 that in the period 1917-1939, sixty-two patients with nodular enlargement of the thyroid were seen at the Mayo Clinic in children aged fourteen years or younger. Of the sixty-two patients, forty-eight had adenomas, twelve had carcinoma and two had thyroiditis. Of the forty-eight patients with adenomas, thirty-five were treated medically and thirteen surgically. Of particular interest is the fact that in no instance of thyroid adenoma, whether single or multiple, was there any evidence of overactivity of the gland. The number of patients with a single

adenoma and those with multiple adenomata were equal. Kennedy felt that the reasons for surgical treatment of these adenomata in children were cosmetic or mechanical, or both. Pemberton and Black, reporting from the same institution about five years later, felt that in addition to cosmetic or mechanical indications for surgery, the possibility of malignancy was often the most important reason for exploration of a nodular goiter in a child. In their material, of the nodular goiters operated upon, one in three proved to be carcinomatous. In many of these cases, the preoperative diagnosis of carcinoma had been made but in others, as in adults, the presence or absence of malignancy was determined only at the time of operation.

It is not within the scope of this paper to enter into a protracted presentation of the time-honored and extensively debated general issue of surgical indications in adenomatous goiter as regards prophylaxis or treatment of possible malignancy. The recent paper by Crile and Dempsey tends to cast doubt on the indiscriminate removal of all nodular goiters on these grounds. They point out, however, that "all adenomas in children must be regarded with grave suspicion, as must discrete adenomas in adults." Certainly all would agree on the advisability of the removal in the adult on the grounds of the possibility of neoplasm, of a single discrete, firm to hard nodule which showed definite evidence of gradual increase in size in a matter of months. One's degree of suspicion regarding such a nodule in a child should be even higher.

### Case Report

The patient was a nine-year-old white male who entered the hospital on August 11, 1948. The family history was negative. Pregnancy, delivery, and the developmental history were all normal. He had had chickenpox, measles, and unilateral mumps in his third year. Tonsillectomy and adenoidectomy had been performed in 1947, at which time a general examination was done and no abnormality of the neck had been noted.

The patient's mother stated that about nine months previously, she had noticed a small rounded swelling at the base of the neck just to the right of the midline anteriorly. This had slowly but definitely increased in size. There was no evidence or history of hyperthyroidism.

The patient's temperature, pulse and respirations were within normal limits. Blood and urine examinations gave negative results. The basal metabolism rate was +4 per cent. The blood pressure was 108/66 mm. of mercury. He weighed 65 pounds. A complete general physical examination was negative except for a moderate

medial strabismus, and the presence of a fairly smooth, well-defined, rounded mass at the base of the neck anteriorly, just to the right of the midline, measuring about 4 by 3 cm. Its position and its ascent on swallowing indicated the thyroid gland as its most probable site of origin. There were no physical signs suggestive of hyperthyroidism.

On August 11, 1948, under intratracheal gas-oxygen-ether anesthesia, a typical collar incision was made. There was a solitary adenoma of the right lobe of the thyroid gland measuring 3 to 4 cm. in diameter. The adenoma was dissected free, taking along a margin of normal thyroid tissue around the entire nodule. After hemostasis had been effected, a small Penrose drain was placed in the thyroid space, the strap muscles were loosely approximated in the midline, and the skin was closed with a running subcuticular stitch of fine catgut.

The pathological examination indicated the following: The specimen consisted of a thyroid tumor that measured 3 by 4 cm. It was circumscribed, pale gray on cut section, and the center was partially cystic and showed some degenerative changes. The capsule was thick and fibrous. The surrounding gland showed nothing of note grossly. The microscopic picture indicated an adenoma composed of dilated acini that were well-filled with colloid, lined by cuboidal epithelium. In some areas the epithelium was hyperplastic and had a papillary appearance. The picture for the most part was that of a colloid adenoma. The surrounding thyroid showed nothing of note. The pathological diagnosis was benign adenoma of the thyroid gland.

The patient's postoperative course was uneventful. He was allowed out of bed on the second postoperative day. The drain was removed on the second day, and the patient was discharged from the hospital on the fifth postoperative day.

The boy was last seen on July 12, 1949, at which time he was in excellent health. He had gained 18 pounds since the operation (about one year previously), and there was no evidence of recurrence of thyroid adenomata.

### Summary

1. Adenomas of the thyroid gland are unusual in preadolescent children. Indications for their surgical removal are cosmetic, mechanical, or the possibility of malignant change. It would appear that this latter possibility is greater in young children than it is in adults.

2. The case of a nine-year-old boy with a solitary adenoma of the thyroid gland is reported. Surgical excision of the adenoma was carried out.

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(Continued on Page 1032)

# Case Report

## MALARIA WITH GENERALIZED PETECHIAE

### Report of Case

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**A** REVIEW of medical literature devoted to a discussion of the signs and symptoms of malaria frequently mentions several types of skin involvement. Herpes, urticaria, <sup>1</sup>indurice,<sup>2,3</sup> spider nevi,<sup>4</sup> and erythematous desquamation<sup>2,3</sup> are described.

Bispham,<sup>2</sup> in a discussion of the pernicious fever in the hemorrhagic type of malaria, mentions that the body may have dense indurated swellings due to large extravasations of blood or may be covered with petechiae, but he reports no specific cases.

### Case Report

E. C. K., a Korean man, aged forty, came to the dispensary April 2, 1948, stating he had been well until four days previously when he had developed a slight sore throat, coryza, anorexia and headache. Shaking chills and generalized malaise followed in twenty-four hours.

He had a temperature of 102° F., pulse rate 144, pharyngitis and petechiae on the ankles and wrists. He was admitted to the hospital with a tentative diagnosis of meningococcemia.

Pertinent physical findings after admission were as follows: There were numerous petechiae about 1 mm. in diameter about both the ankles and wrists. The petechiae did not blanch with pressure. The pharynx was moderately reddened without exudate. The liver border was palpated 1 to 2 cm. below the right costal margin and was not tender. The spleen was definitely enlarged, palpable 3 to 4 cm. below the left costal margin. It was not tender. A blood culture was taken immediately on admission, and 100,000 units of penicillin were given.

The laboratory findings on the day of admission were as follows: white blood cells, 4700; hemoglobin, 14.2 grams; 74 per cent neutrophils, 18 per cent lymphocytes, 8 per cent monocytes. Examination of a blood smear revealed many malarial parasites. These were identified as *plasmodium vivax* by the parasitology laboratory. The urinalysis was negative. A nose and throat culture was negative for *Neisseria intracellularis* and showed many alpha streptococci. A blood culture taken on April second was sterile on the seventh day, and pour plates were sterile at seventy-two hours. The coagulation time was 1 minute and 30 seconds, and the bleeding time 4 minutes, on April 3. Prothrombin time

was 16.2 seconds with a control of 14.1 seconds. The platelet count was 206,000 on April 6.

On the day of admission chloroquine was given with an initial dose of 1.0 gm., with 0.5 gm. in six hours, and 0.5 gm. on each of the two days following.

On the second day of his hospitalization the petechiae were generalized and the liver and spleen were noticeably tender. His temperature dropped to normal on this day and stayed normal throughout his hospitalization of six days. The pulse rate dropped to 80 per minute and remained at that level. The petechiae began to fade on the fourth day.

After the patient's discharge on the sixth day he was seen regularly in the dispensary. He felt somewhat tired but otherwise had no complaints. He took 0.5 gm. of chloroquine weekly for five weeks. He was last seen on May 25, 1948, fifty-seven days following the onset of his illness, and he had no complaints at that time.

### Discussion

The patient was a forty-year-old physician from Korea who could not recall any case of malaria with petechiae in his country. He had left Korea to arrive in the United States six months prior to this illness. He spent six months in Detroit and came to Minneapolis one week previous to this illness.

He gave a history of an illness at the age of eight, and it is his impression that it was malaria. He has had no illness since that time.

This case is presented because generalized petechiae are an unusual finding in malaria.

### Summary

A case of tertian malaria with generalized petechiae was seen in a forty-year-old Korean physician who had been in this country six months.

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# History of Medicine In Minnesota

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## MEDICINE AND ITS PRACTITIONERS IN OLMSTED COUNTY PRIOR TO 1900

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(Continued from the September issue.)

A physician of Rochester stated that in smallpox the emanations from the body of the diseased person were so heavy that they sank to the earth, whereas in scarlet fever the poison was so light that it permeated the atmosphere and one case might be sufficient to spread the disease over a whole city. From another source, a few years later, came the statement that smallpox was being scattered throughout the continent by thousands of buffalo robes that had been used by the Indians to cover the corpses of those among them who had died from smallpox.

There were warnings against too frequent bathing. Typhoid fever, in one statement, was ascribed to accumulations of old paper on the walls of rooms, where one layer upon another had been pasted for years. One editor decried the pernicious habit of backing infants around the streets in baby carriages as a cause of insanity in later life, and said that if the Creator had intended this way of amusing babies he would have located their faces on the other side of their heads. Another said that the majority of people who died from heart diseases were victims of congestion of the lungs also.

The danger of turning kerosene lamps low and of burning them all night was pointed out: "There is no doubt that the alarming prevalence of diphtheria of late years can be traced to this as one of the producing causes." Various prescriptions were published, evidently taken from other newspapers in different parts of the country, usually without giving credit, for the cure of diseases. One for use in diphtheria appeared in the *Rochester Republican* of February 18, 1863:

Remedy for Diphtheria: Make two small bags that will reach from ear to ear, and fill them with hot ashes and salt; dip them in hot water and wring them out so that they will not drip and apply them to the throat; cover up the whole with a flannel cloth, and change them as often as they become cold, until the throat becomes irritated near blistering. For children, it is necessary to put flannel cloths between the ashes and the throat to prevent blistering. When the ashes have been on a sufficient time, take a wet flannel cloth and rub it with castile soap until it is covered with a thick lather; dip it in hot water and apply to the throat, and change as they cool; at the same time use a gargle made of molasses, in a tea-cupful of hot water, and when cool, add one fourth as much cider vinegar and gargle until the patient requires sleep. A gargle of castile soap is good to be used part of the time.

Rules of health were quoted from early medical publications, among them Trall's *Herald of Health* and Hall's *Journal of Health*. From the latter, from a list of ten rules on care of the eyes, comes the following: "Never pick any collected matter from the eyelashes or corners of the eyes with the fingernail; rather moisten it with the saliva and rub it away with the nail of the finger."

About Asiatic cholera, in 1866 one editor said, "We know of no better preventive for the cholera so much talked of but which we don't believe we can get here for a couple of years yet, at the soonest, than the following: 1. Never speak



or think of it. Banish it from your home and circle as a topic of conversation. 2. Be cheerful. 3. Be temperate. 4. Be cleanly. 5. Beware of whiskey and the Democratic party." As it happened, the only case of Asiatic cholera ever diagnosed in Olmsted County occurred in August, 1866, when the patient, an immigrant en route west, died at the City Hotel in Rochester. About the disease, in this period, a Winona editor said. "Don't get scared. If you get sick, go see an educated physician, and you will be in no more danger of dying than usual."

As to whisky, as early as 1862 the *Rochester Republican* warned against the pains and penalties consequent on the use of strychnine whisky that were becoming distressingly apparent in the streets of Rochester almost every day, and urged strong measures for the control of persons under the influence.

*Scope of Medical Practice.*—The early physicians were called on to give aid in all the ills of the day.

Highly annoying, in the earliest years, were the pestiferous prairie itch and sore eyes, and the sharp discomfort of harvest time that came with the binding of wheat by hand, before the days of mechanical binders. The wheat straw wore the finger nails of the workers down to the quick after a few days in the field, bringing acute pain and temporary disability. Some physicians recommended application of tannin or of a solution of alum to harden the fingers, but these remedies had little effect. Some farmers postponed the binding until night, when dew had softened the straw.

There were painful and crippling injuries requiring surgical treatment, which will be discussed later. There were fever and ague, the "dry, bracing climate" notwithstanding. "Yellow jaundice" was common. A true story runs that a visitor in Rochester in that early period wondered aloud what was wrong with the numerous saffron-colored persons he met at every turn; a Dutchman who overheard him said, "Dese am de yellow ganders." Coughs, colds, croup, catarrh and pneumonia were common. There were frequent, and often lethal, cholera infantum and cholera morbus and dysentery. In 1873, when there were many deaths among children from cholera morbus, the disease was described as "not unusually fatal." There were chickenpox, German measles and mumps, scarlet fever, the dreaded but accepted autumnal typhoid fever, and diphtheria and smallpox. Cerebrospinal meningitis took its toll; in 1870 Dr. Hector Galloway gave before the state medical society a detailed report of thirteen cases that he had observed in 1863 in Oronoco Township. Prior to 1872 epidemic diseases received such attention as the faulty knowledge of many of the practitioners and the lack of co-operation on the part of the laity made possible. After the establishment of the state board of health in 1872, and when the authority of the board in matters of public welfare had been increased, there came consistent study and attempted control of epidemic diseases, an undertaking in which all physicians were concerned.

In 1866 and later, hydrophobia broke out in different parts of the county, causing great loss among cattle and hogs, and among dogs, which were sacrificed in considerable numbers, either because they were affected or because they were under suspicion. At this time several persons suffered from an affliction that popularly was diagnosed as hydrophobia, but later was said by physicians of Rochester, "equal to any in the state," to be tetanus.

Trichinosis, variously referred to as trichinae and trichinae disease and trichiniasis, was a subject of editorial comment. The first item that has been noted in the Rochester papers appeared in March, 1866, and was headed "Diet of Worms: and We Do Not Mean the Diet That Bothered Luther." This was a facetious dissertation that ended, "There has never been a greater hoax or humbug

than the sensational articles about the trichina." Next it appeared that the disease was affecting the New York hog market seriously, and then came reports from the Federal Department of Agriculture, giving advice to farmers about the medical treatment of their hogs against all types of vermicular infestation. It was not until March 28, 1884, that the *Rochester Post* mentioned trichiniasis among human beings in Olmsted County, probably the first recognized occurrence of the disease in man in this region. A husband and wife and their six children, living in northern Olmsted County not far from Elgin, Wabasha County, had been attacked about six weeks earlier with "a severe and mysterious disease from which they suffered some time before the nature of it was known. They . . . called the Drs. Mayo [W. W. and W. J.] of this city, who at once pronounced it trichiniasis. The pork from which the family had been eating without cooking was examined through the microscope by the doctors and found to contain large numbers of the parasites." The mother died from the disease and it was expected that some of the children would not recover, as most of them were almost completely paralyzed. "The family removed to this state recently from Wisconsin, and it is understood that they brought the pork with them, so that there is not the least danger of the disease spreading. While there is probably no diseased pork in Minnesota, it will be best not to eat it without its being first thoroughly cooked."

In the first twenty-five years of the country's history, obstetrical work, except in the presence of recognized complications, was handled largely by midwives or by women who were neighbors of the patients. By 1880, chiefly in Rochester and the villages, physicians were being called more often to officiate at normal births. In the earlier period an occasional physician who was a member of the state medical society would report an obstetrical case or a gynecological case of special interest; some of the reports are preserved in the transactions of the society. By the early eighties, it is evident, the practitioners had better knowledge of these fields, and they were discussing at their official meetings, in addition to other conditions, postpartum hemorrhage, puerperal infection and puerperal insanity.

The opening of the Second Minnesota Hospital for Insane at Rochester, in January, 1879, marked the beginning of a new and continuing interest on the part of the local general practitioners in nervous and mental diseases of all types. The cordial relations between these practitioners and the physicians of the hospital staff, and the active participation of the latter in due time in the work of the county medical society, led to broadening of scientific viewpoint.

Little evidence has been noted of special study of diseases of the blood in Olmsted County prior to the late eighteen seventies. In 1877 Dr. W. W. Mayo jotted brief notes in an old case book about a young girl of Rochester whom he was treating for purpura hemorrhagica. In the transactions of the Minnesota State Medical Society for 1878 appears his detailed report of the case, the second of the type in his experience, describing his method of diagnosis, which included microscopic examinations of blood and excreta, and his cure of the patient by rigid control of her diet and by administration of turpentine internally for more than a year. In his account the doctor took less credit than was given him sixty-eight years later by the patient's relatives, who said that after physicians from different cities in southern Minnesota had given the girl up to die, Dr. Mayo was called, with the result stated. The patient lived to the approximate age of seventy years.

As the eighties passed and as the nineties progressed, the physicians of Olmsted County were discussing at medical meetings, from changing points of view, a wide range of subjects. A few topics were, diseases of the blood, nephritis, cirrhosis of the liver, the pneumonias, asthma, rheumatism, heart disease and the uses of

## HISTORY OF MEDICINE IN MINNESOTA

digitalis, atrophic rhinitis, mastoid diseases, spinal disease, erysipelas and "facial poisoning," the intestinal diseases of children, leprosy, exophthalmic goiter, the therapeutic uses of electricity and, as will be shown, the diagnostic and therapeutic value of the x-rays and advances in the art and science of surgery.

*Recorded Causes of Death Prior to 1900.*—One estimable early physician, in reporting illnesses and deaths, used with great frequency the expressions apoplexy of the lungs, dropsy of the heart, and dropsy of the brain; when he performed tonsillectomy, he removed the "tonsil glands." In 1867 Dr. Galloway reported the death of a man in Cascade Township from glanders. When, in 1870, however, he described before the Minnesota State Medical Society his cure of glanders with carbolic acid, the disease having been transmitted from horse to man, the society resolved that the doctor should trace back to the animal from which the disease was contracted and should present the report in writing. In August, 1871, when a man died at Rock Dell after a bout of social drinking, Dr. D. S. Fairchild, of High Forest, and one of the Drs. Cross, of Rochester, performed a postmortem examination. They reported, "He died from an overdose of whisky taken on an empty stomach, which produced congestion of the brain and lungs and inflammation of the stomach, the two latter conditions causing death."

A list of the causes of death compiled from newspapers of Olmsted County prior to 1870 includes most of the pathologic conditions already mentioned in this paper as occurring in that period. Reference to the records of Olmsted County, beginning in 1870, has given the following causes of death, which are quoted here verbatim: No knowing disease, old age, died at birth, abortion, bastard, puerperal fever, croup, typhus, typhoid fever, bowel complaint, cholera morbus, cholera infantum, dysentery, bloody flux, defective bowels, inflammation of the bowels, stomach disease, cancer of the stomach, paresis, nervous fever, brain fever, congestion of the brain, scarlet fever, influenza, catarrhal fever, heart disease, cyanosis, pneumonia of the lungs, phthisis, consumption, ulcerations of the lungs, accident, general debility, and prostration. By the eighties the nomenclature was approaching standardization. Beginning in 1888, in addition to the foregoing causes of death, there appeared "Potts' disease of the spine," spina bifida, albuminuria, heart paralysis from overdose of Gelsemium, phthisis and exhaustion from chronic melancholia, epilepsy, erysipelas, sanguineous apoplexy, inflammation of the stomach, tumor, neuralgic affection of the sciatic nerve, and gallstones. The death from gallstones, in 1898, followed cholecystectomy.

*Scope of Surgical Practice Prior to 1900.*—In Olmsted County the advance in knowledge of surgical diagnosis and surgical technique and of anesthesia and anesthetic agents was more dramatic than was progress in the science of internal medicine.

Although in the ordinary course of practice there were occasions for bleeding, for excision of wens and other superficial growths, and for the setting of broken bones, the early major surgery was that of expediency. Many accidents occurred in the course of hunting, milling, lumbering, and especially in farming, after mowers, reapers, binders and threshing machines came into use. The earliest models of these labor-saving machines lacked protective devices, and as a result many farm workers were victims of accidents that necessitated drastic surgical procedures. There is record of trephination, crude débridement, amputation of mangled fingers and toes, and arms and legs, and attempted repair of injuries in thorax and abdomen. There were occasional crude attempts at plastic surgery.

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Prosthetic surgery other than the use of peg legs and glass eyes was practically unknown.

Until the middle eighties medical ethics did not refuse the public the interest of reading occasionally about their neighbors' illnesses, accidents and, especially, surgical operations, and by the same token, about new equipment purchased by local physicians. If a member of the medical profession acquired an unusual instrument or therapeutic appliance, colorfully illustrated books or anatomical charts, an English gig or a Dexter side-spring phaeton or other vehicle, or installed a telephone (the drumhead type in 1879), or bought a piece of office furniture, the press described it in glowing terms: As when, on August 14, 1885, the *Record and Union* of Rochester announced that Dr. W. A. Allen had acquired a fine modern accessory for his office, "a beautiful and most convenient operating chair. It is upholstered in crimson morroco and is capable of being put into any desired position." From that period it is remembered that two able carpenters and contractors of Rochester, Mr. Nevin C. Pollock and Mr. William F. Riedell, built for local physicians and surgeons examining tables and operating tables of solid oak at twenty-five dollars each.

The best efforts of the press, however, were given to describing injuries and the surgical treatment carried out for their repair. One of the earliest of such operations reported was performed in December, 1860, by Dr. C. S. Younglove, of Rochester, on a citizen of High Forest who, in focussing a Sharp's rifle, shot himself: "The ball entered about the middle of the thigh, traveled along the leg and under the skin, severing some small blood vessels on the inside of the knee, and came out near the ankle making an ugly channel for itself." Under Dr. Younglove's care the man recovered. In August, 1865, Dr. E. C. Cross and his brother Dr. E. W. Cross had a notable case of gunshot wound. "The whole charge of the gun entered the person of Mr. B—— in the left side, passing from near the abdomen through to the hip and passing directly under the surface near the backbone. The surgeons decided to extract the charge by making an incision directly over the point where it lay. The operation was successfully and skillfully performed, the gun wadding, shot and fragments of clothing and several pieces of bone being removed from the wound. The patient bore the painful operation manfully, without the aid of anodyne of any kind, though feeling quite prostrated upon the completion of the operation." The patient lived.

During the early years the Drs. Cross, W. W. Mayo and Galloway were the surgeons of Olmsted County who carried out the greatest number of major surgical procedures. In August, 1869, for example, Dr. E. C. Cross, Dr. Mayo and Dr. Galloway amputated the left leg of a man fifty years of age for a sore that had existed, increasing in size, since the patient was ten years old. "The patient was put under the influence of chloroform and the operation was successful. . . . He is doing as well as can be expected" In 1878 Dr. Mayo, assisted by Dr. E. W. Cross, operated on a farmer whose arm had been injured in a threshing machine accident seven or eight months earlier. They removed the dead bone, shortened the arm and brought the ends of the bone together: "They used a new system of compression rubber bands instead of a tourniquet. . . ."

In the decades before there were local hospitals, patients who received surgical aid usually were operated on in their homes. By the seventies, in Olmsted County, Dr. Mayo and other surgeons of Rochester had begun to utilize rooms in local hotels for operating rooms and for postoperative care of patients from out of town. Beginning in the eighties Dr. Mayo had for several years a small hospital



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of eight or nine beds in the home of a practical nurse in north Rochester,\* where the Samaritan Hotel now stands. As he extended his surgical frontier in answer to conditions of emergency, there were editorial notes on various procedures: drainage of thoracic abscess, tracheotomy (on a child who had had diphtheria), amputation of the breast for cancer (the patient a woman eighty-three years old), removal of submaxillary blood tumor, repair of rectocele, and removal of ovarian tumor. About the last named, it is true, the accounts stressed chiefly the size and weight of the growths removed. In Minnesota, between 1874 and 1880, ovariectomy was done only ten times and only twice successfully. In December, 1880, after designing the necessary surgical instruments and having them made by the patient's husband, a local blacksmith, Dr. Mayo performed his first operation for excision of ovarian tumor and the first of the kind to be performed in Olmsted County. He was assisted by Drs. J. E. Bowers, as anesthetist, and S. W. Gould, both of Rochester, and G. B. Ayres, the professor of anatomy and clinical surgery at the Omaha Medical College of Nebraska; Dr. Ayres had been an early student of medicine under Drs. Galloway and Sanborn, in Rochester. The ovarian tumor removed weighed eighteen pounds: "... after removing the tumor there was a large abscess ruptured in the abdomen and two quarts of matter ran among the intestines. It had to be carefully removed with a soft sponge. This and to stop the bleeding took twice the length of time as to remove the tumor. The woman was over an hour under the influence of ether. ... This operation and its success place Dr. Mayo among the first surgeons of the state."

With the entrance of Dr. W. J. Mayo into practice, in 1883, there was for a time editorial mention of surgical operations in new fields, among them removal of cataract, removal of an upper left jaw for cancer, correction of stenosis of the esophagus that had resulted from swallowing lye, orthopedic procedures, plastic operations on the face (one of these procedures was the creation of lips and nose on a child of three months, at Spring Valley, because of congenital deficiency of those parts), opening of a large renal abscess, procedure for correction of strangulated hernia, excision of a diseased portion of bowel for tumor or abscess and uniting of the sound ends of the intestine, and operations for "inflammation of the bowels." After the coming of Dr. C. H. Mayo, in 1888, the field was extended to include many other operations, including plastic and orthopedic and, particularly, operations on the thyroid gland. It is believed that Dr. W. J. Mayo, fresh from the teachings of Dr. Donald MacLean, professor of surgery at the University of Michigan, and later taught by Dr. Arpad C. A. Gerster, of New York, was the first in Olmsted County consistently to apply listerism. From the beginning, the surgical work of himself and his brother was carried out on principles of asepsis and antisepsis.

Although some practitioners of Olmsted County early accepted asepsis and antisepsis, there were many others who were slow to do so. Reminiscence has given sidelights on surgical practices long since discountenanced. A certain general practitioner of Rochester for some thirty years, beginning in 1885, no doubt was typical of many. The doctor pulled teeth "without pain," first washing out the patient's mouth with some preparation that tasted like carbolic acid, an old-time patient of his has said, a solution so strong that it nearly blistered the oral membranes and left them sensitive for days. For goiter he gave iodine internally and injected hot water and carbolic acid into the thyroid gland. In treatment for pneumonia he used linseed meal poultices and a pneumonia jacket.

\*In the earlier decades of Rochester the large portion of the city that extended far north of the Original Town (so designated on an official map of 1874), which ended approximately at what is now Sixth Street, N. W., commonly was called "North Rochester." East Rochester was the official name of a portion, now in the southeastern section of the city, that lay east of the southern portion of the Original Town. Comparable designation was not given, it is believed, to the gradually developing western portion of the city.

Like many of his contemporaries in the eighties and nineties he performed a limited number of surgical operations in his office, among them an occasional amputation of the breast, and the last type, certainly, in a manner impressively casual. One day when he was in the midst of amputating a breast for cancer he needed help, and, leaving the patient, who was under general anesthesia, unattended on the operating table, he went to another building to seek a young businessman who sometimes lent him a hand. When he returned with the helper, the patient fortunately was still safely on the table. The doctor dissected out the breast, reached up on a shelf for a roll of gauze, tore off a length and stuffed it into the wound. During closure of the wound he happened to drop his needle and thread on the dusty floor, picked it up and went on sewing. Some time later, when the assistant inquired apprehensively how the patient had got along the doctor said, "Oh, she is doing all right."

By the middle eighties detailed references in the public print to the work of individual physicians and surgeons had become few and brief. When practitioners were mentioned in the papers, it was to state that they had attended medical meetings, had read papers before medical societies, had been elected to office in the societies, or were members of boards of health, local or state.

There were, however, a few exceptions to the tacit rule governing publicity. When St. Mary's Hospital† was projected and when it was opened, on September 30, 1889, the local papers gave it much space, and rightly, for there began with this hospital a new era of medical and surgical care of the sick in the county. Again, on September 12, 1895, there appeared in the *Olmsted County Democrat* the following note: "Caesarian Performed at St. Mary's. This is a very rare circumstance and there are very few cases of it on record in the country. All of the medical fraternity will be interested in the case, and it was very unfortunate that the neighboring physicians could not be informed in time to witness the operation. Another striking thing about it is that both mother and child are doing well." (The operation was performed on Mrs. Le B—— on September 6, 1895.) On March 6, 1895, the *Rochester Post* reprinted an article, "The Ray of Mystery," by George Grantham Bain, which had appeared in the *New Yorker* of February 28, 1896, from which one sentence is given here: "Probably no such popular furor for a purely scientific discovery was ever excited before as has grown out of exploitation of the new photography with the aid of the X-ray or Roentgen Ray, as it is popularly known." The x-rays had been announced to the world by Roentgen in 1895. In Olmsted County young Dr. J. Grosvenor Cross was the pioneer in making clinical application of roentgenography. He assembled a workable apparatus and after much study and experimentation was able to display before the Olmsted County Medical Society in January, 1896, and before the Southern Minnesota Medical Association in August, 1896, successful pictures of the hands of a living subject. The local newspaper in reporting these medical meetings stated that Dr. Cross's confreres had expressed great interest and pleasure in the demonstrations. Soon there was record in Rochester of the location with the x-rays of foreign bodies that had been swallowed or that had become embedded in bodily tissues. A few years later certain physicians of the county were reporting the beneficial results of roentgenotherapy in treatment for cancer.

Throughout the eighties and nineties the scope of surgery as practiced in the county continued to broaden, until by 1900 there were few, if any, procedures performed elsewhere that were not carried out successfully by the local surgeons.

†A brief history of the hospital is given elsewhere in this paper. Originally the name of the hospital was spelled "St. Mary's"; in recent years the apostrophe has been dropped. In this account the early form is used throughout.

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The Drs. Mayo, of Rochester, because of superior facilities for work and for graduate study, and because of their recognition of need and opportunity, were leaders in this work.

### Public Welfare

The earliest example of extra-home care was, no doubt, the relief and maintenance of the sick poor, always by local agents. The abating of nuisances injurious to health and comfort early followed, and there was quarantine against smallpox and other contagious diseases. The Minnesota Code of 1851 authorized justices of the peace, village trustees and city councils to exercise these functions. The General Statutes of 1866 made the supervisors local boards of health.

William Watts Folwell, *A History of Minnesota*, 1921, iv, 413.

Olmsted County, as stated earlier, was established by the territorial legislature on February 20, 1855. Within the next few months the county government was organized in accordance with territorial legislation, in the interest of public welfare. Supervisors of the poor were appointed and registration of marriages was instituted in 1855. Four years later the office of coroner began to function, preceding by several years the activity of county physicians and special health officers.

*The County Coroner.*—In Minnesota the elective office of county coroner was established by territorial legislation in 1849. Until 1854 the law authorized any justice of the peace or judge of probate, on occurrence of a death by violence and in the absence of the coroner, to appoint a suitable person as deputy coroner. Amendments, in 1854 and in 1871, improved the functioning of the office by more formal appointment and instruction of deputy coroners. In most localities for a decade or more after 1849 the coroners were laymen; the term of office, originally two years, in 1913 was extended to four years.

On January 4, 1859, the first coroner of Olmsted County, Abram Harkins, of Viola Township, was appointed by the county supervisors. In the autumn of that year the office was filled by the election of Stewart B. Clark, of Rochester, who served his full term, it is believed. Information is lacking about the coronership in the ensuing four years. There is some evidence that in 1865 D. L. King, of Kalmar Township, served for a time either as coroner or as deputy. In the autumn of 1865 Dr. Hector Galloway, of Rochester, was elected coroner.

An item from the *Rochester Republican* of January 31, 1867, to some extent lightens the obscurity of the earlier records:

*County Coroner:* Within the last year and a half several cases have arisen in this county especially requiring the services of a county coroner. Two or three infanticides have occurred in the city in the time referred to, involving, of course, guilt and criminality. For the one year chronicled, these outrages have been allowed to pass without investigation and the community is allowed to settle down into the belief that killing infants and casting their little bodies into the river is not very reprehensible after all.

The sudden death of Mr. Delano [Clark Delano, marble dealer, a suicide] last week suggested anew the necessity for the services of a coroner. The coroner is a county officer and we believe that Olmsted County has promptly elected a person to that office every other year since we have been a resident of the county. But the trouble is, those who have been elected have failed to qualify and serve in that capacity, and we more than suspect that this failure is attributable in some degree at least to the fact that the county commissioners have declined voting a reasonable compensation.

(To be continued in the November issue.)

# President's Letter

## THE COMING MEDICAL MEETINGS

DOCTORS who have vacationed themselves into a state of healthful relaxation are looking forward eagerly to the fall and winter schedule of medical meetings and their contingent opportunities for scientific advancement and comradeship with fellow doctors.

Two excellent meetings—those of the Northern Minnesota Medical Association and the Southern Minnesota Medical Association—were held last month, opening a season that will include state, national and international conferences of exceptional merit.

One large specialty group will be assembling next month: the Third Inter-American Congress of Radiology is taking place in Santiago, Chile, November 11 to 17.

Many another session will be heralded in MINNESOTA MEDICINE and the *MSMA Newsletter* so that doctors will be apprised of meetings abroad, and no further away than the University Continuation Center or County Medical Society assembly places.

Medical meetings serve another purpose, too, in these critical times. It is essential for all of us doctors to understand thoroughly the problems that we are facing, problems which not only affect our professional standards, but the lives and health of all our patients.

As we consider these philosophies and movements and the trend of events, we come to see the entire picture with forceful clarity. Because we are thinking together, with common motivation and objectives, we are able, as a profession, to make the most constructive moves on behalf of our patients and ourselves.



President, Minnesota State Medical Association



# Editorial

CARL B. DRAKE, M.D., *Editor*; GEORGE EARL, M.D., HENRY L. ULRICH, M.D., *Associate Editors*

## HYPERTENSION AND SYMPATHECTOMY

THE GENERAL practitioner and internist are frequently called upon to advise patients with elevated blood pressure. When, if ever, should he advise a dorsolumbar sympathectomy in preference to medical treatment?

The operation of sympathectomy is a serious operation which sacrifices part of the reflex nervous system, is frequently accompanied by serious symptoms of shock postoperatively, often prolonged convalescence associated with neuritic pains, and orthostatic hypotension requiring bandaging of legs and abdominal support for weeks and sometimes months following operation. It would seem that such a procedure should not be undertaken unless the symptoms warrant and unless the results of the operation are likely to relieve the symptoms for a long enough period to be worth while.

Evelyn et al have analyzed 292 of the sympathectomies performed for essential hypertension at the Massachusetts General Hospital during the past thirteen years. Of the 292 patients, 219 were living and seventy-three dead. The authors were able to carefully check 114 of the patients for comparison of blood pressures before and after operation, and found an average reduction of systolic pressure from 177 to 152 and diastolic from 116 to 100 with the patients lying in bed. They found that the common pattern was for the blood pressure to go down after operation and to remain down for a year or two and then, for many, progressively to return to pre-operative levels. In a surprisingly large number of patients, however, the operation had little or no effect on either systolic or diastolic pressures. The striking reduction in blood pressure in the erect position encountered in some patients postoperatively tended to disappear at the end of a year.

The authors were able to study 100 patients who had been operated upon by the Southwick technique (removal of the ganglia from the 8th

to 10th dorsal to the 1st or 2nd lumbar, inclusive) for as long as five years. They found that satisfactory results, as measured by lowering of blood pressure, had been attained in approximately two out of five patients two years after operation and in approximately one out of five after an interval of five years. While these results may not be impressive, the authors feel that the excellent results attained in a small percentage of cases cannot be equaled by any other available treatment.

What can be expected from medical treatment of hypertension as regards life expectancy? The answer, of course, as any life insurance company will verify, is that hypertension on the average reduces life expectancy. When it comes, however, to evaluating the life expectancy of an individual with hypertension several factors come into consideration. There is essential hypertension with little or no evidence of vascular degeneration or kidney involvement which is comparatively benign. And there is rapidly mounting hypertension with eye background hemorrhage and edema of the disc and evidence of severe renal damage, commonly known as malignant hypertension. The prognosis for the benign type is very favorable while that for malignant hypertension is very bad. Furthermore, individuals who develop hypertension after the age of fifty, as a rule, nearly reach their life expectancy. Hypertension, even of extreme degree in elderly people, especially if associated with relatively low diastolic pressure, the result of arteriosclerosis, does not carry with it as unfavorable a prognosis as in the younger group under fifty. According to Burgess,<sup>1</sup> hypertension even of excessive degree that has been present eight years or more and is not associated with well-established cardiac or renal disease usually does not indicate a poor prognosis as to life expectancy. Such hypertension, according to him, does not commonly develop into the malignant type. The most common causes of death in this group are cardiac failure and cerebral accident. Also, according to this author, hypertension of this comparatively benign type, even when making its

appearance before the age of fifty, is comparable with a considerable number of years of life, although life expectancy is materially reduced. He believes sympathectomy is therefore questionable in this group.

It would seem, then, that medical treatment with sedatives, a rest period during the day and at least nine hours of rest at night is unquestionably the treatment for benign hypertension irrespective of age. The physician must not be guilty of over-emphasizing to the patient the importance of the hypertension but should watch for a sudden change in the picture with appearance of evidences of degenerative, vascular changes and headaches. Before this evidence becomes too marked, if the pressure is labile and responds to sedatives and rest, especially if the patient is under the age of forty, sympathectomy should be seriously considered.

Even in the presence of marked evidence of degenerative vascular changes, as evidenced by retinal hemorrhage and albumen with occasional casts in the urine, sympathectomy, according to Rogers and Palmer,<sup>3</sup> may be brilliantly successful. On the other hand, in the presence of marked impairment of renal function or frank heart failure, the operation is contraindicated.

Even though sympathectomy results in satisfactory lowering of blood pressure, which is sustained for two years in only two out of five patients operated upon and for five years in only one of five—and probably even that favorable a result is not obtainable if operation is limited to the more advanced cases—nevertheless, if several years of life with relief of symptoms can be added even in a small percentage of cases, sympathectomy is the best therapeutic means at our disposal.

We wish to emphasize however that individuals with hypertension even of considerable degree but without evidence of cardiovascular change beyond increased light reflex in the retinal vessels and slight albumenuria, will do well as a rule with medical direction and should not be subjected to sympathectomy.

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### CORTISONE AND ARTHRITIS

PHYSICIANS receive queries from arthritis patients as to Cortisone, also known as Compound E, the new "cure" for arthritis, which has received considerable publicity.

The answer is that the use of Cortisone is still in the experimental stage, the supply is very limited, the cost, like all newly developed extracts, is very great, and it is not on the market.

According to an article in the September issue of *Hygeia*, Cortisone is a hormone which was first extracted from the suprarenal glands of cattle by Dr. Kendall of the Mayo Clinic in 1935. Production of a sufficient amount for experimental work with Navy fliers at high altitudes was obtained by 1948. By that time the interest of the Navy had waned and the extract was made available to Dr. Hench of the Mayo Clinic for trial in patients suffering from rheumatoid arthritis. Dr. Hench reasoned that the remissions in the disease which sometimes occur during pregnancy and jaundice might be due to an increased production of some antirheumatic substance in these two conditions and that it might come from the adrenal glands. Bilirubin, it seems, contains many of the chemicals found in the suprarenal secretion. The trial proved successful in a necessarily limited number of patients with rheumatoid arthritis. Daily injections seem to be required for maintaining the improvement in symptoms.

A further approach to the research in rheumatic disease is the extraction of a hormone from the anterior pituitary gland of animals, called ACTH, which has an effect similar to Cortisone. The production of ACTH is also limited. Cortisone is at present extracted from animal bile, and the process is an expensive one. If and when it can be produced synthetically, its lower cost will allow more extensive trial.

### E. T. BELL FUND

UPON the retirement of Dr. E. T. Bell, Professor of Pathology at the University of Minnesota on June 15, 1949, steps were taken at the suggestion of many of his admirers to raise a fund of \$100,000 to establish and maintain a Museum of Pathology in the Medical School for teaching purposes.

Dr. Bell has served the Medical School since 1910. He first taught in Anatomy and from 1911 until 1949 in Pathology. Since 1921 he has been

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chief of the Department of Pathology. During this period he has made valuable contributions to the science of pathology and has made his influence felt through his teaching and writing. Through his co-operation and his personal qualities he has endeared himself to many graduates of the Medical School and to practitioners throughout the state. It seems fitting that a Museum of Pathology should be established through voluntary contributions by his many friends.

Contributions have been received during the summer months and the campaign will be continued throughout the next year when it is hoped the goal will be reached.

Contributions designated for the E. T. Bell Fund should be sent to the Minnesota Medical Foundation, at 132 Medical Sciences Building, University of Minnesota, Minneapolis 14, Minnesota. Some confusion may have arisen with regard to the relationship of the Minnesota Medical Foundation to the Greater University Fund. The Medical Foundation has to do with contributions for medical school activities and formerly handled collections independently. Now the greater University Fund, which is concerned with donations for University activities at large and serves as a public relations agency, has placed its office facilities at the disposal of the Medical Foundation. Donors to the E. T. Bell Fund of the Medical Foundation will be listed also as donors to the Greater University Fund.

Since Dr. Bell's retirement in June, he has devoted himself to research in pathology at the Medical School.

### ANTIHISTAMINICS—A WARNING

**A**N ARTICLE which recently appeared in *The Journal AMA*\* issues a warning that the antihistaminic drugs are not innocuous, and should be handled with respect.

Many antihistaminic drugs have been offered for the treatment of hay fever and other allergic conditions, which in itself indicates that none has proved 100 per cent efficacious. Untoward side reactions such as drowsiness, vomiting, diarrhea and headaches occur frequently and are doubtless sufficient to cause the patients to discontinue the medication of their own accord.

In the case reported in the article mentioned, a baby sixteen months old died from an acute kidney damage after taking one 100 mg. tablet of *Thenylene*. Another case is cited of convulsions in a child produced by the same drug. Prompt gastric lavage was credited in saving the child's life. In a third case cited, toxic gastrointestinal symptoms and hematuria resulted in a child three years old from taking 320 mg. of *Benadryl* over a three-day period.

The significance of the report is that the antihistaminic drugs should not be given to children and should not be left within their reach. Gastric lavage should be promptly initiated in case even one tablet is ingested. Adults should be instructed to discontinue the antihistaminic at the first appearance of an untoward reaction. Dosage should be limited to the minimal amount required to alleviate symptoms, and medication should not be prolonged longer than necessary.

### A PSYCHIATRIST LOOKS AT COMPULSORY HEALTH INSURANCE

Good health for Americans is a goal upon which agreement is general. While the physician's professional concern with this goal does not lead him to consider himself as the sole instrument for its realization, yet wisdom about it should be most available to him. Human motivations and personality will finally determine the outcome whatever the plan. No system can function at a higher level than the people who participate in it. Congress cannot legislate a result; it can only legislate a plan. Regardless of the broad humanitarian objectives of the plan, if it is not geared to the motivational factors in American behavior it will be unsuccessful.

On this premise let us examine the personality needs and motives involved in a proposal for compulsory health insurance. This can be best approached by contrasting the present with the proposed situation. The first basic change involves simple arithmetic. There are two participants in the present medical relationship, the physician and the patient; three in the proposed situation, the physician, the patient and the government agency. Psychiatric experience, psychological experimentation and common knowledge agree that the greater the number of relationships the greater the complexity of problems. A person to person relation involves one major interpersonal variable. A three person situation involves three interpersonal variables and three reactions to the interaction of the two other persons—a total of six variables. This represents a six-fold increase in complexity. When we are dealing with three groups, interrelations of astronomical proportions develop.

Now let us contrast the probable motivations involved in the present medical situation with those in the compulsory health insurance proposal. Our present system includes primarily: (1) A patient who is at-

\*Rives, Hugh F., Ward, Berl B. and Hicks, M. L.: A fatal reaction to Methapyrilene (*Thenylene*). *J.A.M.A.*, 140:1022, (July 23) 1949.

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tempting to regain or maintain adequate health. This patient's economic security, self-esteem and social prestige depend on a successful outcome; (2) a physician, who personally or by professional referral, is in a favorable position to help. The physician's self-esteem, economic security, social prestige and altruistic needs are directly dependent upon how adequately he can help. Thus both the patient's and the physician's motives converge toward the therapeutic goal. Both persons are anxious to relieve the health problem. The likelihood of favorable results is maximal.

### Patients' Motivations

Contrast the present situation with the probable result of the compulsory health proposal. (1) The patient will view the physician as a public servant who has already been paid for his services and who is hence obligated to treat even a non-significant problem; (2) he will tend to feel that his deducted taxes need to be repaid in some way and will insist on being repaid. This will probably result in unnecessary calls, overly long illness disability and hostility toward the government agency and the physician when efficient termination of disability is attempted; (3) the patient is likely to develop a strong dependency relationship with extravagant expectations for help and extreme annoyance at failure. In our culture the emphasis upon self-reliance, and personal initiative makes the dangers of dependency greater than elsewhere. Dependency is generally disapproved here, and in any society results in deterioration and refusal to accept responsibility.

While the foregoing can be inferred from the motivational analysis we need not depend exclusively upon this reasoning. Experience in Great Britain, Germany, the U. S. Armed Forces and Veterans Administration demonstrate that the patients' motivations work in this fashion. These experiences demonstrate that the patient (1) makes unnecessary and picayune demands for attention; (2) has excessively long and frequent minor illnesses and disabilities; (3) becomes excessively and inappropriately critical of medical and governmental service with resultant loss of faith in the physician's ability to cure his illness.

### Physicians' Motivations

Now let us examine the probable shift in the physician's motivations. Currently he is concerned with professional and therapeutic adequacy for reasons of self-esteem, social prestige, economic security and personal service. Currently he deals with a patient who attempts active co-operation for much the same reasons. The satisfaction of both persons depends upon their ability to solve the therapeutic problem. Under compulsory health insurance the physician's motivations would be shifted: (1) He will be dealing with a patient whose demands have become picayune and excessive; whose co-operation is reduced and whose hostility has increased. The physician can legitimately be expected to have less interest in the patient just because of these changes; he will also have less time for the patient's real problems. The physician may also be expected to develop a reactive hostility with a further deterioration in therapeutic adequacy; (2) supplementing the foregoing basis for "the

brush-off" the physician would have an added incentive under (a) a salary system, to do as little as possible for the greatest financial return or, (b) under a per capita system, to see as many patients as minimally as possible for the maximal financial return; (3) since the physician's responsibility is no longer directly to the patient he would tend to feel less keenly than he now does the need for complete adequacy; (4) since the physician would no longer be completely responsible for the patient, but would share responsibility with a government agency his personal pride in professional excellence would tend to diminish; (5) since the incentive system to which our present generation of physicians is accustomed would be grossly changed they would be less adequately motivated; (6) an intense resentment of the noncreative possibilities of their work, the minor complaints and hostilities of their patients, the irksome dependency and submission to a government agency, and the lowering of the prestige level of the profession might be expected to develop; (7) the high type of person drawn to medicine by our present incentives of humanitarian service, social and self-esteem, and economic adequacy might no longer choose the medical profession. This change would result from the poorer quality of performance possible, the tendency of government to underpay public servants, and the lack of opportunities for personal initiative and gratification under government service. Hence the intellectual and personal qualities of newer doctors would probably be lower than the present levels.

The foregoing psychologically derived observations about physician motivations have also been demonstrated by experience. Various U. S. publicly supported and managed programs, and foreign governments with compulsory health insurance have found: (1) that the quality of medical service deteriorates; (2) that the physician substitutes for the development of clinical maturity a tendency to blame others and shift responsibility; (3) that the physician tends to reduce his adequacy of treatment of all patients for both practical and motivational reasons; (4) that hostility toward both the government and the patient develops with a consequent loss of personal satisfaction and professional effectiveness. All of these factors are reflected in a higher cost of and lower quality of medical service.

### Government Agency Motivations

The third group whose motivations complicate the compulsory health insurance picture is the administering governmental bureau. The phenomenal growth of government bureaus in the past few years, and the tendency for each to expand its activities and personnel illustrates part of the problem from this area. The sheer clerical work added to the doctor's already overloaded program would be a source of disruptive irritation. Beyond this, the desire of non-medical administrators to run things would tend to harass and antagonize physicians. This would further facilitate a deterioration in the physician's sense of responsibility and capacity for quality service. Experience with non-medical administrators of health problems has shown that their lack of capacity to understand the ramifications of the problems and their desire to usurp control leads to restrictive interfering rules



## EDITORIAL

and red tape. These inevitably result in deterioration of service. At the same time the physician subjected to these controls develops some apathy about his own adequacy and permits his service to deteriorate because he is unable to do anything about it. Dependency feelings may be expected to develop in physicians under these circumstances. He is no longer a responsible, self-reliant individual because the agency shares the control of the patient.

### Cost of Service

Finally, the motivational problems discussed would have a direct and extreme effect upon the cost of service. With increase in patient demands, decrease in patient cooperation and deterioration of physician service we might expect a situation of rising medical costs and deteriorating medical service. The increased costs would constitute an additional motivational hazard for both physicians and patient. Both would be frustrated by the increasing discrepancy of service and cost.

This situation has also been demonstrated in countries which have adopted compulsory health insurance. In Germany between 1885 and 1939 the cost of insurance per member multiplied eight times. In New Zealand the cost has risen from less than \$8 million in 1942 to \$20 million in 1947. One can maintain that these increased costs are equally shared, but the stated objective of compulsory health insurance is to help people avoid the disastrous economic effects of illness, not to bring equal disaster to everyone.

In summary it appears on motivational grounds that the complexity of health problems would be increased, that disabling sickness would be prolonged, that the quality of medical service would deteriorate, that personal satisfaction and clinical maturity for the physician would be reduced, and that the progress of medical science would be slowed as a result of compulsory health insurance. Whether this deteriorated and inflated medical service would become more widely available can be evaluated on similar grounds.

The foregoing contrast has somewhat over-idealized our present system of medical services. That there are plenty of contemporary problems is quite apparent. These defects are now being remedied, however, by the adoption of voluntary health insurance, by improved medical education and quality of services, and a better distribution of physicians.—FRANKLIN G. EBAUGH, M.D., in the *Rocky Mountain Medical Journal*, May, 1949.

### COMPULSORY HEALTH INSURANCE AS A PARTY ISSUE

It would be unfortunate if Compulsory Health Insurance were to be made a party issue by either the Democratic or Republican parties. There is no evidence of a popular demand for the proposal, and it is safe to say that hundreds of thousands of members of both parties are violently opposed to it—so much so that the issue would influence their vote.

The Democratic National Committee was severely criticized by one of its own members, Dr. R. B. Robins of Camden, Arkansas, a committee member, at a committee meeting held in Washington, August 24, 1949, for its support of agitation for Compulsory Health Insurance.

Dr. Robins said, in part:

"The Democratic party is *not* on record in its party platform as favoring Compulsory Health Insurance. At the Philadelphia convention last year, the Democratic party announced support of a National health program for expanded medical research, medical education and hospital and clinic facilities. This does not constitute endorsement or recommendation of Compulsory Health Insurance.

"The Compulsory Health Insurance issue is a bad penny that turns up every few years. It has never obtained sufficient support to merit incorporation in the platforms of either of the major political parties. It has never obtained sufficient support to be legislated in Congress.

"The reasons for its weakness are apparent. In every large nation where government medicine has been attempted, there has been a decline in the quality and quantity of medical services and an increase in their cost. Only borrowed American dollars prevent its utter disintegration in these same countries today.

"Admittedly, some way must be found to take the financial shock out of illness. Voluntary Health Plans are one answer. The proof of this is the rapid growth of these plans. More than 60 million Americans are now insured against the expense of major illness through these plans. They are not yet perfect, but they are being improved all the time, both as to range of coverage and benefits.

"There is a wealth of factual material, including a study by the impartial Brookings Institution, in support of the argument that the voluntary way is the best way to meet the need for budget-basis medical care.

"Not only are hundreds of thousands of physicians and dentists opposed to government-controlled medicine, but there are more than 1500 civic, service, veteran and other organizations, with memberships totaling millions, that have gone on record against it.

"Do we (the Democratic party) want to serve notice on these millions that they are not wanted by this party because they have gone on record against socialized medicine? Compulsory Health Insurance is repugnant to the ideals and convictions of the American people."

### NEW MEDICAL JOURNAL

A new journal entitled *Angiology, The Journal of Peripheral Diseases* will begin publication in February, 1950. Dr. Saul S. Samuels, chief of the Department of Peripheral Arterial Diseases, Stuyvesant Polyclinic, New York, will be editor-in-chief. Among the associate editors will be Dr. Alton Ochsner of Tulane University; Dr. Keith Grimson of Duke University; Dr. Leo Loewe of Long Island Medical College; Dr. D. W. Kramer of Jefferson Medical College, and Dr. Gerald Pratt of New York University Medical School.

The new journal will be published by Williams and Wilkins Company, Baltimore.

# MEDICAL ECONOMICS

Edited by the Committee on Medical Economics  
of the

Minnesota State Medical Association

George Earl, M.D., Chairman

## STATE SHIFTS OPINION ON HEALTH INSURANCE

If Minnesotans had been given the responsibility, early in 1949, of deciding whether the United States should have compulsory health insurance, the Minnesota Poll indicates that they would have immediately decided over medical care to the government.

That was in February.

The February 20 issue of the Minneapolis *Tribune* reported the results of the poll thusly:

"President Truman's proposal for government tax supported national health insurance is favored by a majority of Minnesota residents. . . . Almost two in every three adults in addition feel that such a program is needed."

The table of percentages showed that 40 per cent of the state's population had replied "yes" to the question of "Do you think national health insurance is needed in the United States?" Only 4 per cent thought people should take care of themselves and another 4 per cent asserted that private health insurance could do the job. Oddly enough, the same percentage—again 4—thought that "it's too socialistic."

A second report of the survey, published in the February 27 issue of the *Tribune*, began with these words:

"Fully two-thirds of Minnesota's adults feel that lack of money keeps people from getting doctors' care or hospital treatment when they need it. . . . Whatever the reasons, the opinions are important insofar as they shed light on the prevalent attitude among Minnesotans in favor of a government tax-supported national health insurance program."

### "Only One-third Aware"

An interesting sidelight in this survey was the fact that only about "one-third of the persons interviewed were aware of the American Medical Association's opposition to the kind of national health insurance advocated by President Truman and Security Administrator Oscar Ewing."

Three months later, Poll directors evidently were aware of a change in Minnesotans' thinking about medical care and the payment of medical and hospital bills. The survey was repeated, with people again given their choice between federal and private health insurance.

It was found that 48 per cent of the adult population preferred a private health plan; 28 per cent still favored government control.

"These are among the answers of people who would rather have private health insurance," stated the poll summary:

"I'm against the government setup on medicine'; 'I believe in private industry'; 'I'd rather do my own deciding on doctors'; 'we have private insurance now and we're satisfied with it'; 'we'd get better service'; 'the federal plan would involve too much regimentation'; 'a private physician out for hire would give patients better care'; 'the federal plan would eventually mean less medical advancement because it would take initiative away from the doctors'; 'it would put too many insurance companies out of business'."

### Change of Mind

The most recent survey made by the Minnesota Poll was published August 10. This time people were asked if they would like to see a program of health insurance, similar to that in England, adopted in the United States.

Here are the heartening results:

	All	City	Town	Farm
Yes	29%	31%	22%	27%
No	53	53	55	53
Qualified	5	5	6	2
No opinion	13	11	17	18

### British Company Fights Socialization

Great Britain's biggest sugar company, is providing an example of persistence and strategy that is an innate criticism of the British medical profession, which with the health and well-being of all England at stake, still yielded to government control with scarcely a struggle.

Tate and Lyle, preparing to defend to the last

cube its right to operate as a private business, according to *Time* magazine, had "On the 2,000,000 cartons of sugar it sells daily . . . printed: 'Keep S Out of State'; 'Tate, Not State'; 'Untouched by Hand—Hands Off Sugar.'"

### AMA COUNTS HEALTH POLICY HOLDERS

The Survey Committee of the AMA Council on Medical Service has just completed a study of the number of persons covered by the various forms of voluntary accident and health protection in the United States (as of December 31, 1948).

The findings show that 60,995,000 persons have hospital insurance; 34,060,000, surgical; and 12,895,000, medical.

Blue Cross plans and plans sponsored by medical societies head the list, accounting for 31,246,000 of the individuals covered by hospital insurance, 10,608,000 of those cushioned against surgical expenses, and 5,712,000 of the persons whose budgets are insulated with medical insurance.

"It will be noted that over 93 per cent of the hospital expense coverage and virtually all of the surgical and medical expense coverage effected through these organizations was added during the past ten years."

So reads the Committee report, entitled "A Survey of Accident and Health Coverage in the United States."

### SEVENTEEN CONGRESSMEN TO STUDY HEALTH PLANS

Serenely indifferent to official and unofficial protests about the high cost of transporting congressmen, seventeen members of the House Interstate and Foreign Commerce Committee spent September in Europe, looking over the various forms of nationalized medicine and considering civil aviation and petroleum problems.

The reported itinerary was: five days in the British Isles, three in Sweden, a day in Frankfurt, a day in Geneva and two days in both Rome and Paris.

Meanwhile at home, the public, apprised that it cost \$25,000 in tax money to fly a group of senators in a military transport from Cairo to Tokyo, was taking a dim view of most congressional and other tax-supported travel programs.

### BROOKINGS INSTITUTION MAKING SECOND SURVEY

The Brookings Institution, impartial fact-finding group, has begun its second survey of medical and hospital care in the United States.

The Brookings prospectus of the study states, in part:

"If we are to have a sound national health program,

the first requirement is to ascertain the facts as to the state of medical service in the United States today. For a comprehensive picture of the availability of medical care in the United States, both private and public organizations should be covered. These would include medical services provided by industry, trade unions, medical societies, philanthropic and fraternal organizations, national health associations, group health and other voluntary prepayment plans, state and federal medical aid programs, including the veterans and the armed forces, and industrial and commercial insurance."

The findings are expected to extend into two volumes: "The first part of the study would be a comprehensive, descriptive and statistical report designed to make available reliable data on the extent of medical care and the existing and potential provisions for meeting the cost through insurance or prepayment plans, and, in the case of those who cannot pay, through public services or private philanthropy. The second volume, based upon the facts assembled in Volume I, would be an evaluation of the numerous plans now in operation and those proposed. It would deal with the issues of public and private policy and indicate the means by which adequate medical care can best be provided."

The last survey on medical care that the Brookings Institution made was published in April, 1948, entitled "The Issue of Compulsory Health Insurance."

In the preface, the Institution pointed out that the survey had been made in response to an invitation by Senator H. Alexander Smith.

"The request was made in May, 1947, and if the results were to be of service to the Committee, they had to be available early in 1948. Limitations of time and resources necessarily restricted somewhat the scope of the analysis and the amount of original research."

This time, the Brookings Institution is evidently going to make a thorough probe of the situation. Its conclusions and the facts it discovers should be invaluable to everyone interested in increasingly better medical care for the American people.

### GOVERNMENT PLANS BRITISHERS' LIVES

Socialism in England has become like a dominant wife who claims her husband's pay envelope and returns to him only money enough for carfare and a haircut. E. T. Leech, editor of the *Pittsburgh Press*, puts it this way:

"What happens to the individual is that the government spends a large part of his wages on what it thinks is good for him—and which the politicians refer to as 'free benefits'—and lets him spend the balance."

And still there are those in the United States who do not recognize compulsory health insurance as the important and opening wedge in a scheme to convert the entire economy of the country.

# Minnesota Academy of Medicine

Meeting of April 9, 1949

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, April 13, 1949. Dinner was served at 7:00 o'clock and the meeting was called to order by the President, Dr. J. A. Lepak, at 8:20 p.m.

There were forty-one members and two guests present.

Minutes of the March meeting were read and approved.

Upon ballot, the following were elected as candidates for membership in the Academy:

John Culligan, M.D. ....	Saint Paul
John Briggs, M.D. ....	Saint Paul
Robert Priest, M.D. ....	Minneapolis
Roy E. Swanson, M.D. ....	Minneapolis

The scientific program followed.

## TRANSVERSE COLOSTOMY VERSUS CECOSTOMY FOR ACUTELY OBSTRUCTING LESIONS IN THE LEFT HALF OF THE COLON

CHARLES E. REA, M.D., W. W. von AMERONGEN, M.D., E. W. SICKLES, M.D.,  
and M. WINDMILLER, M.D.  
Saint Paul, Minnesota

The purpose of this paper is to compare the mortality of transverse colostomy with that of cecostomy for acutely obstructing lesions in the left half of the colon. In this study, the statistics from four of the larger hospitals in St. Paul, Minnesota, from 1938 to 1948, were used.

Every surgeon agrees that acute obstruction of the large bowel is a surgical emergency. For obstructions in the left half of the colon, one may do an inguinal colostomy (if the lesion is below the rectosigmoid), a transverse colostomy, or a cecostomy. For acute obstructions in the right half of the colon, one may do an appendectomy, a cecostomy or a double-barreled ileostomy, threading a catheter through the ileocecal valve into the cecum. If the patient is not acutely obstructed, one may decompress the bowel by successful intubation with a Miller-Abbott tube.

For acute obstructions of the right half of the colon, most surgeons would perform a cecostomy. For similar lesions in the left half of the colon, most surgeons would do a transverse colostomy, but some would prefer to do a cecostomy. One of us (C.E.R.) cannot remember a cecostomy ever being performed in cases of acute obstruction of the large bowel at the University of Minnesota Hospitals over an eighteen-year period. At that institution, a transverse colostomy is preferred for acute obstruction of the left half of the colon and a double-barreled enterostomy, threading a catheter through the ileocecal valve into the cecum for acute obstructions of the right half of the colon. It should be said that the mortality at that clinic for acute and chronic obstructions of the large bowel is one of the lowest reported in the literature.

However, many excellent surgeons in this area prefer

a cecostomy in the therapy of acute obstruction in the left half of the colon. The late Dr. A. R. Colvin, who for many years was Chief of the Surgical Staff at Ancker Hospital, Saint Paul, Minnesota, did only a cecostomy to decompress obstructive lesions of the colon. Interestingly enough, during his whole surgical career, he never did a Mikulicz obstructive resection; he performed a cecostomy to decompress the bowel and then later did a resection of the lesion and an end-to-end anastomosis of the colon if possible.

### Cecostomy

Between 1936 and 1943 numerous papers appeared, principally by Allen, Graham, McNealy and Rankin, extolling the value of cecostomy in the treatment of carcinoma of the colon and rectum.

Rankin found it of value as a complementary procedure at the time of resection for obstructive carcinoma of the colon, but pointed out that its use in the treatment of acute obstructions was not without danger. Graham reported thirty-three acute obstructions of the colon for which cecostomy was done, with only two deaths, and Allen used cecostomy in the treatment of 250 cases of malignancies of the colon, with only eleven deaths which could be attributed to cecostomy.

In 1942 Wangenstein deplored the high mortality following cecostomy for acute malignant obstructions of the colon, which approached 50 per cent in his clinic. He advised transverse colostomy, or ileostomy and threading of a catheter through the ileocecal valve as a substitute. Collier and Ransom in 1944, reviewing 571 cases of carcinoma of the rectum, reported seven cases of cecostomy with five deaths, a mortality of 71 per cent. In all fairness it must be said that these cases were done for high grade obstructions in far advanced cases.

In 1945, Heyd, reporting the treatment of thirty cases of carcinoma of the distal colon, stated that cecostomy

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# MINNESOTA ACADEMY OF MEDICINE

TABLE I. MORTALITY FOLLOWING CECOSTOMY

			Cases	Deaths	Mort. %
Rankin	1936	All types of lesions	13	0	0.0
Rankin	1939	Complementary Operation	42	5	11.9
		Preliminary for Acute Obstruction	16	3	19.9
		Operable	8	0	
		Inoperable	8	3	
Graham	1939	Acute Obstruction	33	2	6.0
Allen	1941	Malignant Lesions	250	32	12.9
Wangenstein	1942	Malignant Obstruction	—	—	50.0
Collor	1944	Malignant Obstructive Lesions	7	5	71.4

was seldom a satisfactory method of decompression since it relieved only the gaseous distention and did not deflect the fecal current. He advocated the use of the Devine type of colostomy which completely defunctionalizes the distal colon and renders subsequent resection an easier and safer procedure.

The mortality for cecostomy reported by these authors will be found in Table I.

Several methods of doing a cecostomy have been described in the literature. The chief objection to most of these operations is that it is impossible to do them aseptically. Placing sutures in the distended cecum is impossible to do without leaving holes in the wall with resulting leakage of intestinal contents. Placing a catheter into the cecum after decompression with a suction trochar is synonymous with peritoneal contamination unless twelve to twenty-four hours have elapsed to allow the serosa of the cecum to become adherent to the peritoneum. An acutely distended cecum is often difficult to deliver. Wolfer, Beaton and Anson found the cecum to be mobile in only 11.2 per cent of 125 adult anatomical specimens. Thus it is rarely possible to deliver an entire loop of cecum through the incision; usually only a portion of the anterior wall of the cecum is deliverable above the level of the anterior abdominal wall so that later it will not retract below the skin level.

McNealy and Lichtenstein in 1937 described a simple technique aimed at obviating these dangers. Through a muscle-splitting incision the cecum is partially delivered, and two curved clamps applied to the cecal wall and left in place. No suturing is attempted and the bowel is not opened for at least twelve hours following operation. Howser presented eighteen cases using this technique in which no evidence of peritonitis developed.

## Transverse Colostomy

Dennis in 1944 reported thirty-eight patients with acute obstruction of the colon treated by transverse colostomy, with three deaths, a mortality of 7.9 per cent. Perforation had occurred in two of these patients prior to operation and one died postoperatively from duodenal hemorrhage. Fallis in 1946 described sixty-two cases of transverse colostomy for acute obstruction, with only two deaths, one from pulmonary embolism the third day and one from uremia on the eighth day.

The technique of transverse colostomy involves a high transverse incision through the right rectus muscle, through which a loop of transverse colon is gently drawn and fixed by a glass rod underneath the bowel.

TABLE II. OVER-ALL MORTALITY

	Cases	Living	Dead	Mort. %
Cecostomy	81	52	29	36
Transverse Colostomy	35	29	6	18

The bowel is needed after a few hours and cut across after a day or two. In this way there is little chance of contaminating the peritoneum and the fecal stream is diverted. Generally speaking, it is the safest operation for decompressing the obstructed large bowel due to lesions in the distal half of the colon.

## Cecostomy Versus Transverse Colostomy

There have been but few reports in which the results of cecostomy versus transverse colostomy for acute obstructions in the left half of the colon have been studied. An interesting series is that from the Cook County Hospital, reported by Hendricks and Griffin. W. S. Dorimer, Jr., in a ten-year study of 200 cases, found that up until 1944, a total of 135 consecutive cases of emergency colonic decompressions were done with a mortality rate of 44.5 per cent. In 1944 they began to employ transverse colostomies whenever possible. In 1945 there was a total of forty-nine cases of colonic obstruction with a total mortality of 20.5 per cent. In thirty-nine of these patients carcinoma was present. In the thirty-nine patients, twenty-four cecostomies were done with a mortality of 29 per cent, fifteen transverse colostomies with a mortality of 6.6 per cent, and ten Mikulicz procedures with a mortality of 20 per cent. From 1940 to 1945, inclusive, forty-seven transverse colostomies were performed with a 21 per cent mortality, and 142 cecostomies with a mortality of 40.5 per cent. They were thus able to lower their mortality from 44.6 to 20.5 per cent, apparently by the use of a transverse colostomy. However, the employment of transverse colostomy was only one of the factors which affected the mortality rate so markedly. Other important factors were early differential diagnosis of large from small bowel obstruction and surgical decompression without delay when conservative methods were ineffectual. The mortality rate immediately dropped from 40.5 per cent to 20.5 per cent within one year. This was due to strict attention to the above factors and not due to any operative procedure by itself, for in 1946 their mortality for twenty-one cases of emergency decompression was 23.3 per cent; twelve cases of transverse colostomy and nine cases of cecostomy gave the same mortality rate.

## Analysis of This Series

As mentioned above all the cases of cecostomy and transverse colostomy recorded at Ancker Hospital, Bethesda Hospital, Miller Hospital and St. Joseph's Hospital, Saint Paul, Minnesota, for the years 1938 to 1948, inclusive, were studied in this series.

The over-all mortality in a total of 116 cases was almost twice as great for cecostomy as compared to that for transverse colostomy (Table II). These figures mean little, however, unless the type of case is analyzed.

1. *Lesions in the Proximal Half of the Colon Treated by Cecostomy.*—These cases are classified as to whether

TABLE IV. COMPARISON OF CECOSTOMY AND TRANSVERSE COLECTOMY IN LESIONS OF DISTAL HALF OF COLON

Distal Half	St. Joseph's						Bethesda						Anchor						Miller						Summary						
	Cecostomy			Transverse Colostomy			Cecostomy			Transverse Colostomy			Cecostomy			Transverse Colostomy			Cecostomy			Transverse Colostomy			Cecostomy			Transverse Colostomy			
	No.	L.	D.	No.	L.	D.	No.	L.	D.	No.	L.	D.	No.	L.	D.	No.	L.	D.	No.	L.	D.	No.	L.	D.	No.	L.	D.	No.	L.	D.	
Malignant																															
Obstructive Operable	4	3	1g	2	1	1	0	0	0	1	1	0	11	7	4	4	3a	1	7	6	1d	4	3	1f	100%	73%	27%	100%	74%	27%	3
Inoperable	7	2	5h	0	0	0	1	0	1i	2	2k	0	10	3	7	2	2b	0	6	4	2	4	4	0	22	16	37%	62%	100%	8	
Non-obstructive Operable	2	2	0	1	1	0	1	1	0	1	1	0	0	0	0	0	0	0	1	1	0	0	0	0	100%	100%	100%	100%	0	0	
Inoperable	1	1	0	2	2	0	2	2j	0	1	0	1l	0	0	0	0	0	0	1	1	0	2	0	4	100%	0	2	100%	80%	20%	1
Nonmalignant																															
Obstructive Operable	1	1	0	2	1	1	1	1	0	0	0	0	0	0	0	1	0	1c	0	0	0	2	2	0	100%	100%	0	5	60%	40%	2
Inoperable	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Non-obstructive Operable	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	100%	0	0
Inoperable	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

a. Died 99 days later.  
b. Died 84 days later.  
c. Died 30 days later.  
d. Pul. embolism 6 days.

e. Pul. embolism.  
f. Perf. cecum time of operation  
g. Paralytic ileus.

h. 2 had perf. cecum time of operation.  
i. Cecostomy failed.  
j. 1 living 4 months later.  
k. Discharged 28 days later.  
l. Discharged 42 days later.  
m. Overhydrated.

# MINNESOTA ACADEMY OF MEDICINE

the lesion in the proximal half of the bowel was malignant or nonmalignant, operable or inoperable, obstructing or nonobstructing. The results are tabulated in Table III. While the series is small, the mortality for the malignant obstructing but operable lesions in the

It should be mentioned that the above-mentioned cases treated by cecostomy at Miller and St. Joseph's Hospital were done by one individual surgeon at each hospital. However for all malignant lesions in the distal half of the colon, the mortality for cecostomy was 40

TABLE III. LESIONS IN THE PROXIMAL HALF OF THE COLON TREATED BY CECOSTOMY

Proximal Half	Ancker			Miller			St. Joseph's			Bethesda			Total		
Malignant	No.	L.	D.	No.	L.	D.	No.	L.	D.	No.	L.	D.	No.	L.	D.
Obstructive															
Operable	4	3	1	1	0	1*	2	1	1†	0	0	0	7	4	3
Inoperable	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Non-obstructive															
Operable	0	0	0	1	1	0	0	0	0	1	1	0	2	2	0
Inoperable	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total													9	6 (33%)	3
Nonmalignant															
Obstructive															
Operable	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Inoperable	0	0	0	1	0	1	0	0	0	0	0	0	1	0	1
Non-obstructive															
Operable	0	0	0	1	1	0	0	0	0	0	0	0	1	1	0
Inoperable	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total													2	1 (50%)	1

\*Evisceration, died in 7 days.

†Died of bronchopneumonia.

TABLE V. TRANSVERSE COLOSTOMY COMPLEMENTARY TO OTHER OPERATIONS

Other Operations	Living	Dead
Resection of carcinoma of sigmoid	2	
Prostatectomy for carcinoma of prostate with rectal extension	1	

TABLE VI. CECOSTOMY COMPLEMENTARY TO OTHER OPERATIONS

Other Operations	Living	Dead
Resection sigmoid; hysterectomy for fibroids	1	
Cecostomy and resection trans. colon for Ca. Tr. colon	1	
Cecostomy and resection descending colon for Ca. des. colon		1*
Cecostomy and resection sigmoid colon for Ca. sigmoid colon	4	
Cecostomy and appendectomy (Ca. ascending colon)	1	
Cecostomy, appendectomy and hysterectomy	1	
Total	9	1

\*Peritonitis at time of operation.

proximal half of the colon treated by cecostomy was over 40 per cent (three deaths in seven patients).

2. *Comparison of Cecostomy and Transverse Colostomy in Lesions of Distal Half of Colon.*—The results of this study are tabulated in Table IV.

It is interesting that the mortalities for cecostomy and transverse colostomy in malignant, operable, obstructing lesions in the distal half of the colon were the same (27 per cent).

TABLE VII. CECOSTOMY FOR OTHER CAUSES OF OBSTRUCTION

Other Causes	Living	Dead
Paralytic ileus		1
Paralytic ileus, peritonitis following appendectomy	1	
Carcinoma of prostate with extension to bladder and rectum		1
Partial obstructed sigmoid, etiology unknown	1	
Large bowel obstruction, cause unknown		1

per cent (twenty-two deaths in fifty-five cases) as compared to 15.4 per cent (four deaths in twenty-six cases) for transverse colostomy.

3. *Cecostomy and Transverse Colostomy Complementary to Other Operations.*—These cases are recorded in Tables V, VI, and VII. They are self-explanatory and are included only for completeness.

## Conclusion

For the average surgeon, a transverse colostomy is preferable to cecostomy for obstructing lesions in the distal half of the colon. It is not only easier to deliver the transverse colon but the operation can also be done more aseptically. In this study, the mortality of cecostomy was the same as that for transverse colostomy (27 per cent) in obstructing, operable, malignant lesions of the left half of the colon. The reason was that most of these cecostomies were done by a few highly trained surgeons. Even then, a mortality of 27 per cent leaves much to be desired. Since the over-all mortality for cecostomy was twice that for transverse colostomy in this series, transverse colostomy would seem to be the operation of choice for obstructing lesions in the distal half of the colon.

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## Discussion

DR. LOGAN LEVEN, Saint Paul: I enjoyed Dr. Rea's discussion of the value of cecostomy in the management of lesions of the left side of the colon. He stressed the point that cecostomy in some surgeons' hands carries a very low mortality. I believe that the operation of transverse colostomy is simpler than cecostomy, and in the same surgeon's hands would carry a lower mortality as a rule than would cecostomy. Of greater importance, however, is the question of the efficacy of the operation itself. Cecostomy as a rule results in merely a fecal fistula and does not divert the entire fecal stream as can be done by transverse colostomy. Because the operation is simpler, the mortality generally lower, and the operation more effective, I prefer transverse colostomy to cecostomy in the management of obstructive lesions of the left side of the colon.

DR. E. A. REGNIER, Minneapolis: I agree with what was said about the two types of decompression of the

bowel. I think one is hard put with a lesion in the right half of the colon to do anything but a cecostomy for decompression. You don't always have a choice, but sometimes you can do an ileostomy. Many times I have used the Wetzel type of ileostomy with a long tube with multiple perforations. The tube is threaded down through the ileocecal valve. It prevents distention of the right colon and prevents rupture of the colon. Many of these cases in forty-eight to seventy-two hours will spontaneously open and decompress themselves. I believe that ileostomy is a better and safer procedure than cecostomy for decompression of the right colon and that a transverse colostomy is far superior to cecostomy for obstructive lesions of the left colon.

DR. REA (in closing): I am grateful for this discussion. What we are particularly interested in is this: given an acutely obstructing lesion in the left half of the colon, is it better to do a transverse colostomy or a cecostomy? Most of the older surgeons would seem to have a preference for cecostomy. I might say that while a Fellow in surgery at the University of Minnesota Hospital, I never saw a cecostomy performed, and yet the results of treatment of acute obstruction of the large bowel at that institution are equal if not superior to those reported elsewhere. One of my first patients on the surgical service at Ancker Hospital, Saint Paul, had an acute obstruction of the large bowel. The late Dr. Alexander Colvin saw the patient with me and asked what I planned to do. I replied "A transverse colostomy." He asked, "Why not a cecostomy?" I told him that I had never done one. He replied, in turn, that he had never done a transverse colostomy but that he always did a cecostomy in such cases. (He let me do a transverse colostomy.)

In general, a transverse colostomy is a simpler and safer operation to perform than a cecostomy in cases of acute obstruction of the large bowel. In expert hands, the corrected mortality of transverse colostomy is almost negligible. However, it is only fair to say that, in expert hands, the mortality from cecostomy in comparable cases is equally as low. With what we know now of fluid balance, blood and electrolytic replacement, antibiotics, the mortality of any of these operations is not what it was one or two decades ago.

## PERIODIC PARALYSIS

GORDON R. KAMMAN, M.D.  
Saint Paul, Minnesota

Periodic paralysis is recognized clinically by the development of intermittent attacks of flaccid paralysis of the skeletal muscles of the extremities, loss of the deep tendon reflexes, and loss of electrical excitability both to faradic and galvanic currents. During an attack of periodic paralysis the mental condition of the patient remains clear.

**Etiology.**—The condition is probably functional in nature. No gross changes have been consistently found in the spinal cord, peripheral nerves, or the involved muscles. The condition may be familial but it is not necessarily so, and many sporadic cases have been reported. Apparently the condition is the result of various etiologic factors. Some patients suffer attacks of paraplegia following bouts of malaria; in some cases

there is enlargement of the thyroid gland, and some patients under treatment for Addison's disease have attacks of periodic paralysis following the assimilation of excessive amounts of desoxycorticosterone acetate.

Periodic paralysis is known by a variety of other names i.e. nocturnal paralysis, night palsy, paroxysmal myoplegia, paraplegia spinalis intermittens nervosa, et cetera.

**Incidence.**—The disease is considered rare but it is probably more common than is ordinarily believed. Up until 1941, 400 cases were reported in the literature with thirty-five deaths. Males outnumber females in the proportion of about three to one.

**Age.**—The disease usually develops in the first or second decade of life. It frequently comes on at puberty or during adolescence, and during this period the symptoms are usually more severe than they are later in

Much of the material in this article was obtained from an excellent monograph on "Periodic Paralysis" published by John H. Talbott in *Medicine*, 20:85-143, (Feb.) 1941.



life. Later in life there is a tendency for the attacks to diminish in frequency and severity, and sometimes they disappear entirely during adult life.

**Inciting Factors.**—Various forms of trauma, prolonged debilitating diseases and fevers, and a great variety of other incidents have been cited as inciting factors. Frequently an attack follows the ingestion of a high carbohydrate meal. The attacks frequently develop in the middle of the night, and they are thought in this case to be the result of the ingestion of a high carbohydrate meal during the preceding evening. The glucose tolerance curve is normal in most of these patients.

An attack may be precipitated by the administration of adrenalin. This is probably due to the raising of the blood sugar and the depressing of the serum potassium resulting from the injection of the adrenalin. However, adrenalin is not as consistent in producing an attack as is a high carbohydrate meal.

Sometimes insulin with glucose will produce an attack, much as prolonged hyperglycemia. This seems paradoxical, but is presumably due to the stimulation of the secretion of adrenalin resulting from the parenteral administration of insulin.

**Paralysis.**—The paralysis begins peripherally in the extremities, usually the legs, and progresses centrally. In a few patients the paralysis may begin in the hips and shoulders and spread peripherally. It may be partial or complete, localized or generalized, involve either the upper or lower extremities, or it may be unilateral. The paralysis is flaccid, and it spares the muscles of the face, mouth, and throat. The accessory muscles of respiration and the sphincters also are spared. However, some fatal cases have been reported in which the muscles of respiration and deglutition were involved.

There also is an abortive type of the paralysis known as "crises frustes." These abortive attacks vary from stiffness and weakness in the extremities to paralysis with reduced deep reflexes. In some patients these abortive attacks may last for as long as a week without paralysis. As said before, there is never any mental clouding. Some reports on patients who have died indicate that the patients remain mentally clear until the end.

In some cases there may be enlargement of the extremities during paralysis. In one patient the circumference of the thigh increased 8 centimeters and of the forearms 2 centimeters during the period of paralysis, and returned to normal after the paralysis had passed.

The changes in electric excitability are different from those found in curare. In periodic paralysis the reaction to both galvanic and faradic stimulation is absent. In curare paralysis, only the response to faradic stimulation is lost, i.e., galvanic stimulation which stimulates the muscle fibers themselves results in a muscular contraction. This indicates that the dysfunction in periodic paralysis is not at the myoneural junction.

Recovery from the paralysis occurs anatomically in the reverse order to that in which the paralysis developed.

**Frequency and Duration of Attacks.**—There is extreme variability in the frequency and duration of attacks, all the way from one to two in a lifetime to several a week. The attacks last for six or eight hours and sometimes for as long as two or three days. In a case reported by Machalachlan in 1932 the paralysis lasted for eight days. This is the longest case on record.

**Laboratory Findings.**—There is a slight leukocytosis with relative increase in lymphocytes. There is also a transient albuminuria and oliguria.

The basal metabolic rate may be increased in patients suffering from thyrotoxicosis. One case was reported in which the basal metabolic rate increased from plus 17 to plus 59 during the period of paralysis. This again sounds paradoxical because one would expect a decrease in oxygen consumption when the muscles are paralyzed. The probable explanation is that there is a transient disturbance of the intermediary metabolism of carbohydrates during the paralysis, and this demands an increased oxygen intake.

The electrocardiogram shows striking and unusual changes all the way from normal to decreased amplitude of the T waves, prolongation of P-R, Q-R-S, and Q-T intervals. Left axis deviation was observed in many cases, and one case of left axis deviation was observed in a child seven years of age.

**Blood Chemistry.**—The most striking change in the blood chemistry is a decrease in the serum potassium and serum phosphates during an attack. These changes are believed to be intimately concerned with the pathogenesis of the attacks. The potassium does not leave the body but probably migrates to the liver along with glycogen. In other words, the liver is enriched with glycogen as well as with potassium. Such migration is consistent with the empiric observation that attacks of paralysis follow high carbohydrate meals.

It is important to note that a reduction in serum potassium will not always result in paralysis, but paralysis is always accompanied by reduction in serum potassium. Furthermore, reduction in potassium will not produce paralysis in all people. The individual must be susceptible to paralysis in order to suffer this condition following a reduction in serum potassium. Moreover, 1 gram of KCl intravenously will result in recovery from the paralysis in a few minutes. This is not a local effect because 0.1 gram of KCl injected into the brachial artery will not relieve the paralysis if the venous return is obstructed for a period of eight minutes. However, upon release of the venous obstruction, recovery from the paralysis is seen. Therefore, the curative action of potassium either is central, or some substance is formed in the viscera by the action of potassium and is carried to the muscles to restore power.

**Treatment.**—General hygienic measures, avoidance of high carbohydrate intake, and the daily administration of 10 to 15 grams of KCl a day are the best known methods of treatment.

## Case Report

G. R., male, single, aged twenty, was referred on February 22, 1949, by Dr. R. M. Kilgard of Watertown, South Dakota. The family and past histories were non-contributory to the patient's present illness. During the Thanksgiving vacation of 1948, Mr. R. was riding in a car en route to his home from college. About four o'clock in the afternoon he fell asleep. When he awakened, his legs seemed to remain "asleep," i.e., he was unable to use them. When he tried to walk, he staggered and fell. There were no sensory disturbances. The paralysis lasted for about twenty-four hours and then gradually left and Mr. R. made a complete recovery. His local physician examined him shortly after the attack and was unable to demonstrate any muscular weakness.

On February 10, 1949, Mr. R. suffered a second attack. He again had been riding in a car and had fallen asleep. When he tried to get out of the car, he fell to the ground and was unable to walk. He was carried to his bed, and the following day the muscle strength gradually returned in his lower extremities.

There were no symptoms suggestive of multiple sclerosis, there was no impairment of the sensorium, and no other disturbances in consciousness.

The neurological examination was negative throughout for organic signs.

The basal metabolic rate was -3.

The spinal fluid was clear and under normal pressure; it contained 3 cells, 50 mg. protein, and had a negative Wassermann test and negative colloidal gold curve.

The glucose tolerance test showed the following:

Fasting blood sugar	102 mg.	Urine negative
½ hour	148 mg.	Urine negative
1 hour	150 mg.	Urine negative
2 hours	112 mg.	Urine negative
3 hours	82 mg.	Urine negative
4 hours	92 mg.	Urine negative
5 hours	93 mg.	Urine negative
Serum potassium	26. mg.	
Serum phosphorus	3.9	

Mr. R. was placed on 15 grains of potassium chloride three times a day and instructed to increase the dose gradually to 30 grains three times a day. He returned home and has not had any difficulty since.

## Discussion

DR. E. M. HAMMES, Saint Paul: Dr. Kamman has presented a very interesting syndrome, namely, periodic paralysis. There are two main groups of diffuse paralysis of the extremities. In the one group, we have acute anterior poliomyelitis, postdiphtheric neuritis, other forms of toxic neuritis, multiple sclerosis and hysteria. All of these diseases have a normal serum potassium. The second group comprises periodic paralysis, also similar syndromes associated with acidosis nephritis, over-treatment for Addison's disease and occasionally thyrotoxicosis. The mortality rate in periodic paralysis is about 10 per cent. While determining the diagnosis in some of these rather puzzling disorders, it might be a safe procedure to administer to these patients potassium in some form. If it is not due to potassium deficiency, no harm is done; if it is, the early administration of potassium will greatly lessen the mortality rate.

Dr. Kamman's case had a serum potassium of 36, as I recall. I presume this was due to the fact that the patient was practically over the attack.

There are two disorders which respond miraculously to a single therapeutic dose and the result confirms the diagnosis—namely, prostigmine for myasthenia gravis, and potassium for periodic paralysis. When the effect of the drug subsides, the symptoms usually recur.

DR. VERNON L. HART, Minneapolis: I would like to ask a question. Do any of the paralyzes remain permanent with subsequent development of deformity?

DR. C. J. WATSON, University of Minnesota: I think we have all become increasingly aware of the importance of hypopotassemia. Dr. Hammes referred to diabetic acidosis. We have seen persons in diabetic coma with rather characteristic breathing who are promptly benefited by the administration of potassium. I have seen cases in the past where the ketosis was taken care of, yet the patient died. Quite a few have since been shown to be due to lowering of serum potassium. Darrow showed that the cause of death in infantile diarrhea is often a hypopotassemia.

I think that it is difficult to understand just how the potassium is lowered in these cases such as Dr. Kamman has described so well. It seems evident that the potassium and glucose mechanisms are disturbed. There may be an enzyme lacking in the liver which prevents too rapid utilization of potassium in glucose metabolism. Insofar as uremia is concerned, a situation can arise where one has to be very careful because there are cases of uremia with hypopotassemia, and others with hyperpotassemia may die if given more potassium. I do think that within the not too distant future the use of the flame photometer will become more and more routine in hospital laboratories, for determinations of sodium and potassium. It is only in the last few years that we have become aware of the great importance of the intravenous administration of KCl.

DR. KAMMAN (in closing): In answer to the question as to whether these paralyzes ever persist long enough to produce permanent contracture (Volkman contracture), I would say no. The paralysis does not last long enough to produce such a contracture. When recovery from paralysis takes place, it is complete, and it is my understanding that it takes more than just a few hours of muscular paralysis to result in a contracture. One of the most fascinating things in periodic paralysis is the completeness with which a person can be paralyzed, and the prompt and complete recovery which can occur. One case of quadriplegia was described in which a patient was able only to lift his head, and the clinical picture was like that of a person with a broken neck with transection of the cord in the high cervical region. He was completely flaccid, and yet he recovered after the intravenous administration of KCl.

The meeting was adjourned.

A. E. CARDLE, M.D., Secretary

## SARCOIDOSIS

(Continued from Page 990)

## Summary

The clinical and laboratory findings in seventeen patients with sarcoidosis are reviewed. The clinical diagnosis in each case has been substantiated by histopathologic study of either a section of skin or lymph node. Laboratory studies, including cultures and the inoculations of animals to determine the presence of *Mycobacterium tuberculosis*, were done on tissue specimens in each case. Material from all seventeen cases gave negative results.

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## In Memoriam

### LEO S. BURNS

Dr. Leo S. Burns of South Saint Paul died suddenly on September 7, 1949, at the age of forty-eight.

Dr. Burns was born at St. Thomas, Minnesota, October 29, 1901. He attended St. Thomas College in Saint Paul and obtained his medical degree from the University of Minnesota Medical School in 1930. He interned at the University Hospital, Minneapolis.

Dr. Burns served as South Saint Paul school physician from 1937 to 1942 and was a past president of the Dakota County Medical Society. During World War II he was a captain in General Patton's army.

Surviving are his mother, Mary E. Burns of Saint Paul, and two sisters, Mrs. Leo McCue of National City, California, and Mrs. Howard Prairie of Farmington, Minnesota.

### HOMER C. COLLINS

Dr. Homer C. Collins of Duluth died July 31, 1949, at the age of ninety.

He was born at Fairport, New York, January 4, 1859. After attending public schools at Rochester, New York, he obtained a B.S. degree from Cornell and studied medicine at Cornell and the College of Physicians and Surgeons in New York, where he obtained his medical degree in 1884.

From 1884 to 1889 he was superintendent of the State hospital in Rochester, Minnesota. After taking post-graduate training at the New York Postgraduate Eye and Ear infirmary, he located in Duluth in 1890—the first eye, ear, nose and throat specialist in the city. In 1941 Dr. Collins celebrated his fifty years of practice in Duluth.

Dr. Collins was a member of the St. Louis County Medical Society, the Minnesota State and American Medical Associations and the American Academy of Ophthalmology.

He is survived by his widow, Gertrude, a son, Homer Jr., and three daughters—Mrs. A. Laird Goodman, Duluth; Mrs. Eric Calman, Madera, California, and Mrs. E. L. Hemenway, Englewood New Jersey.

### GEORGE E. MALMGREN

Dr. George E. Malmgren, formerly of Saint Paul, died August 24, 1949, in Los Angeles, following an operation. He was forty-seven years old.

Dr. Malmgren was born in Saint Paul, obtained his medical education at the University of Minnesota, graduating in 1926. He was on the staff of the Mayo Clinic for several years before moving to California, twelve years ago.

### NORMAN REUBEN SCHNEIDMAN

Dr. N. R. Schneidman, chief of the pulmonary diseases section at the Veterans Hospital, Minneapolis, died September 6, 1949, at the age of forty-two.

Born in Russia, Dr. Schneidman came to Minneapolis at the age of fourteen and obtained his medical education at the University of Minnesota. After serving an internship at the Minneapolis General Hospital, he practiced at Pipestone and at the White Earth Indian Reservation. He served as a lieutenant in the Navy.

Dr. Schneidman was a member of the Hennepin County Medical Society, the Minnesota State and American Medical Associations, the Minneapolis Society of Internal Medicine, the Trudeau Society, the Beth El Synagogue and B'nai B'rith.

### BAXTER A. SMITH

Dr. Baxter A. Smith of Crosby, Minnesota, died in August, 1949. He was born in Harrowsmith, Ontario, February 17, 1876.

Dr. Smith obtained his M.D. degree at Queens College, Kingston, Ontario, in 1905. He practiced at Biwabik from 1906 to 1913. His specialty was industrial surgery.

He was a member of the Upper Mississippi Medical Society, the Minnesota State and American Medical Associations.

### CHARLES CARROLL WALKER

Dr. Charles C. Walker, a pioneer Lamberton physician, died at the Redwood Falls rest home on August 13, 1949, at the age of seventy-nine.

He was born May 27, 1870, at Kilbourn Dells, Wisconsin. He received his medical degree from Northwestern University Medical School in 1896 and had practiced medicine at Curry, Raymond, and Lamberton for over fifty years. He retired two years ago.

Dr. Walker was married to Julia Cole who passed away two years ago. He is survived by a son Harold, of Duncan, Oklahoma, and a daughter, Mrs. Katherine Smith, of Denver, Colorado, both foster children.

He was a medical officer in World War I and a member of the American Legion.

### THYROID ADENOMATA IN CHILDREN

(Continued from Page 1006)

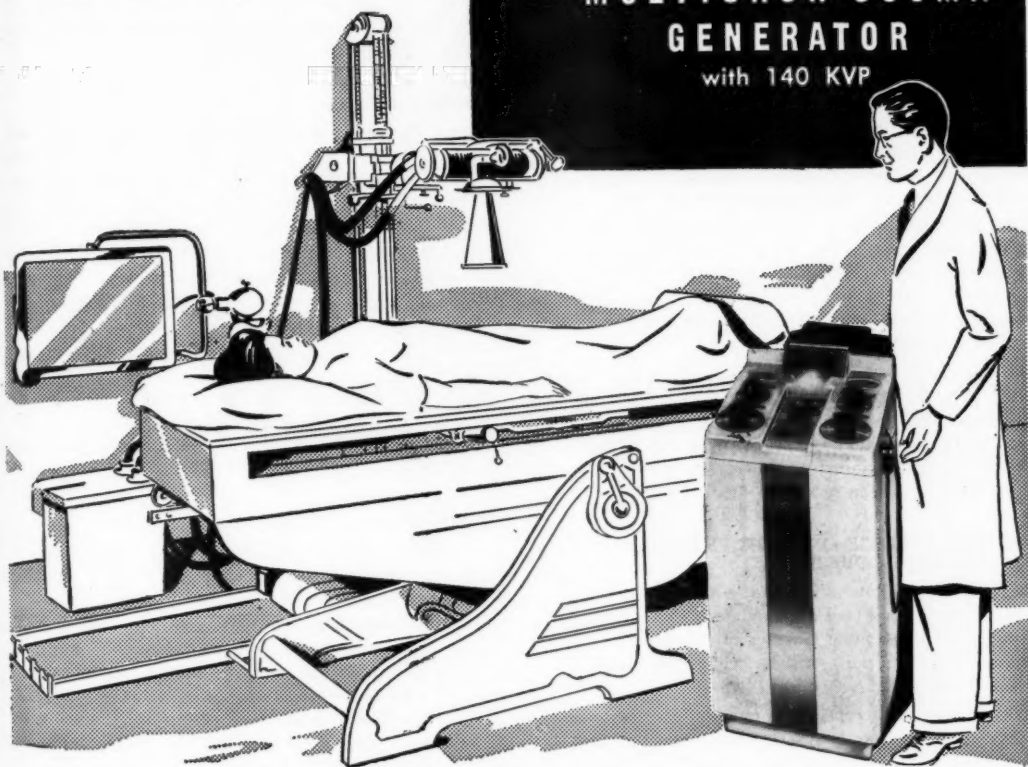
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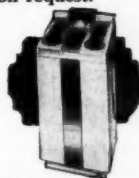


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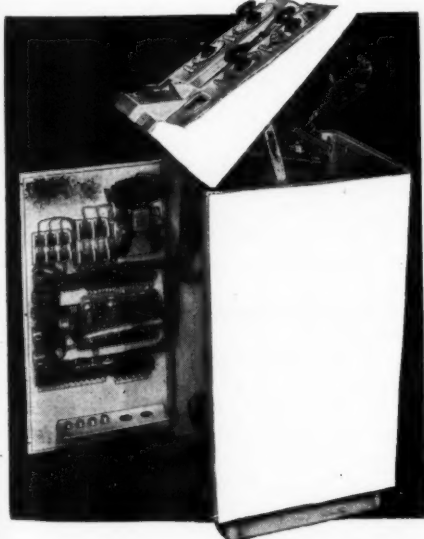


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## ♦ Reports and Announcements ♦

### INTERNATIONAL MEDICAL ASSEMBLY

The thirty-fourth annual assembly of the International Medical Assembly of the Inter-State Postgraduate Medical Association of North America will be held at Philadelphia in the Public Auditorium, October 31 to November 3.

This assembly will hold its scientific sessions in the morning, afternoon and evening for four days, and the sessions will consist of addresses by outstanding professors from the various medical schools of the United States and Canada. The assembly dinner will be held Wednesday evening in the Crystal Ballroom of the Benjamin Franklin Hotel, following which the president of the Assembly, Dr. Everts A. Graham, will make an address on "Changing Concepts in Surgery." At the dinner the president-elect, Dr. Waltman Walters of the Mayo Clinic, will be presented.

The assembly has rightfully taken its place as one of the outstanding medical meetings of the year. All physicians are invited to attend. The registration fee is \$5, and registration may be made at the Hotel Benjamin Franklin on Sunday, October 30, the day preceding the opening of the sessions.

### AMERICAN COLLEGE OF CHEST PHYSICIANS POSTGRADUATE COURSE

A postgraduate course in diseases of the chest, sponsored by the Council on Postgraduate Medical Education and the New York State Chapter of the American College of Chest Physicians, will be held at the Hotel New Yorker, New York, November 14 to 18.

The meeting will consist of morning and afternoon sessions, with addresses by specialists in chest diseases and related fields. Registration fee is \$50 and application should be made to the American College of Chest Physicians, 500 North Dearborn Street, Chicago 10, Illinois.

### VAN METER PRIZE AWARD

The American Goiter Association again offers the Van Meter Prize Award of \$300 and two honorable mentions for the best essays submitted concerning original work on problems related to the thyroid gland. The award will be made at the annual meeting of the Association which will be held in Houston, Texas, March 9, 10 and 11, 1950, providing essays of sufficient merit are presented in competition.

The competing essays may cover either clinical or research investigations, should not exceed three thousand words in length, must be presented in English, and a typewritten double-spaced copy in duplicate sent to the Corresponding Secretary, Dr. George C. Shivers, 100 East St. Vrain Street, Colorado Springs, Colorado, not later than January 15, 1950. The committee that will review the manuscripts is composed of men well qualified to judge the merits of the competing essays.

A place will be reserved on the program of the annual meeting for presentation of the prize award essay by the author, if it is possible for him to attend. The essay will be published in the annual *Proceedings* of the Association.

### UROLOGY AWARD

The American Urological Association offers an annual award of \$1,000 (first prize of \$500, second prize \$300 and third prize \$200) for essays on the results of some clinical or laboratory research in urology. Competition shall be limited to urologists who have been in such specific practice for not more than five years and to residents in urology in recognized hospitals.

The first prize essay will appear on the program of the forthcoming meeting of the American Urological Association, to be held at the Hotel Statler, Washington, D. C., May 29—June 1, 1950.

For full particulars write the Secretary, Dr. Charles H. de T. Shivers, Boardwalk National Arcade Building, Atlantic City, N. J. Essays must be in his hands before February 20, 1950.

### OMAHA MID-WEST CLINICAL SOCIETY

The Omaha Mid-West Clinical Society will hold its seventeenth annual assembly at Hotel Paxton, Omaha, Nebraska, October 24 through 28.

Scientific motion pictures will open the daily programs. Timely subjects have been chosen for round table discussions immediately following luncheons and dinners. Scientific and technical exhibits will be presented.

Further information may be obtained by writing to the executive office, 1031 Medical Arts Building, Omaha, Nebraska.

### COUNTY MEDICAL SOCIETY OFFICERS NATIONAL CONFERENCE

The sixth national conference of county medical society officers (the "Grass Roots Conference") will be held at Hotel Statler, Washington, D. C., on December 8. Among the features of the conference will be descriptions of several of the nation's "Outstanding Achievements in Community Medical Leadership." All registrants for the AMA Clinical Session and their wives are invited to attend the conference, which is sponsored by the Board of Trustees of the AMA.

### OLMSTED-HOUSTON-FILLMORE-DODGE COUNTIES SOCIETY

A meeting of the Olmsted-Houston-Fillmore-Dodge Counties Medical Society was held in Rochester on September 7. Dr. M. M. Hargraves, Rochester, presented a paper on the differential diagnosis of chronic myelogenous leukemia, and a thirty-minute colored sound motion picture on the use of the Mayo Clinic library

(Continued on Page 1036)



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**OLMSTED-HOUSTON-FILLMORE-DODGE  
COUNTIES SOCIETY**

(Continued from Page 1034)

was shown. Dr. H. W. Woltman, Rochester, is president of the four-county society.

**ST. LOUIS COUNTY SOCIETY**

The principal speaker at a meeting of the St. Louis County Medical Society in Duluth on September 8, was Arthur M. Calvin, Saint Paul, executive director of the Minnesota Medical Service Association and the Minnesota Hospital Service Association. Mr. Calvin discussed "The Cost of Hospital Care in Duluth." Under the leadership of Dr. M. H. Tibbetts, Duluth, president of the society, the members studied a proposed revision of their constitution and by-laws.

**WASHINGTON COUNTY SOCIETY**

The regular monthly meeting of the Washington County Medical Society, held September 13, was devoted to a consideration of the actions taken by the House of Delegates of the Minnesota State Medical Association at the May session. Much attention was given to the five resolutions that were referred to the county societies. Resolution No. 1 was rejected, but the other four were endorsed.

The society has sponsored the placing of twelve large copies of the picture entitled "The Doctor," by Luke Fildes, in the Lake View Memorial Hospital, the county court house and the large schools of the county. Forty-three smaller pictures will be placed in the rural schools.

**CONTINUATION COURSES****Traumatic and Pediatric Surgery**

The University of Minnesota announces a continuation course in traumatic and pediatric surgery to be presented at the Center for Continuation Study on November 10, 11, and 12, 1949. The course, which is intended for general physicians, will emphasize the diagnosis and management of surgical conditions occurring in children. Special attention will be paid to the treatment of fractures, especially those occurring during childhood.

**Child Psychiatry**

A course in child psychiatry will be presented at the Center for Continuation Study on November 28 through December 3, 1949. This continuation course, which is intended for pediatricians and general physicians, will emphasize normal, emotional, intellectual, and social development of infants and children and the emotional and behavior problems seen in infancy, childhood, and adolescence. Dr. Adrian Vander Veer of the Department of Psychiatry, University of Chicago, will participate as a visiting faculty member.

City-wide x-ray surveys can be conducted with relative economy of means and money. Previous experience in cities already surveyed and preliminary studies of other communities indicate that if present facilities are fully utilized and if newly discovered cases are given realistic disposition, the increased case load of tuberculosis will not present a grave problem to the community.—FRANCIS J. WEBER, M.D., *Ohio Public Health*, Feb., 1948.

# Correspondence

To the Editor:

The study of twins is of great value in providing information concerning the respective importance of hereditary predisposition and environmental influences in disease in man. The results of the use of this method have shown a hereditary predisposition to tuberculosis, diabetes, and tumor formation, and a high, medium or low intelligence quotient.

There is some *a priori* evidence showing an hereditary predisposition for peptic ulcer. Only six cases of the occurrence of peptic ulcer in the one or both of mono- or dizygous twins have been reported in the readily accessible literature. Since twins are born in 1 of 86 births and identical twins in 1 of 344 births and the general incidence of ulcer is from 5 to 10 per cent there should be plenty of material available.

I should like to ask physicians to co-operate in assembling such material by sending me cases in which (1) one or both twins develop peptic ulcer, (2) the site of the ulcer, (3) the age of onset of ulcer, (4) the type of twins (monovular or diovular), (5) the sex of the twins, (6) the date of birth of the twins, and (7) the number and age of the brothers and sisters and the absence or presence of ulcer in each.

Yours sincerely,

A. C. Ivy, M.D.

Department of Clinical Science  
University of Illinois.

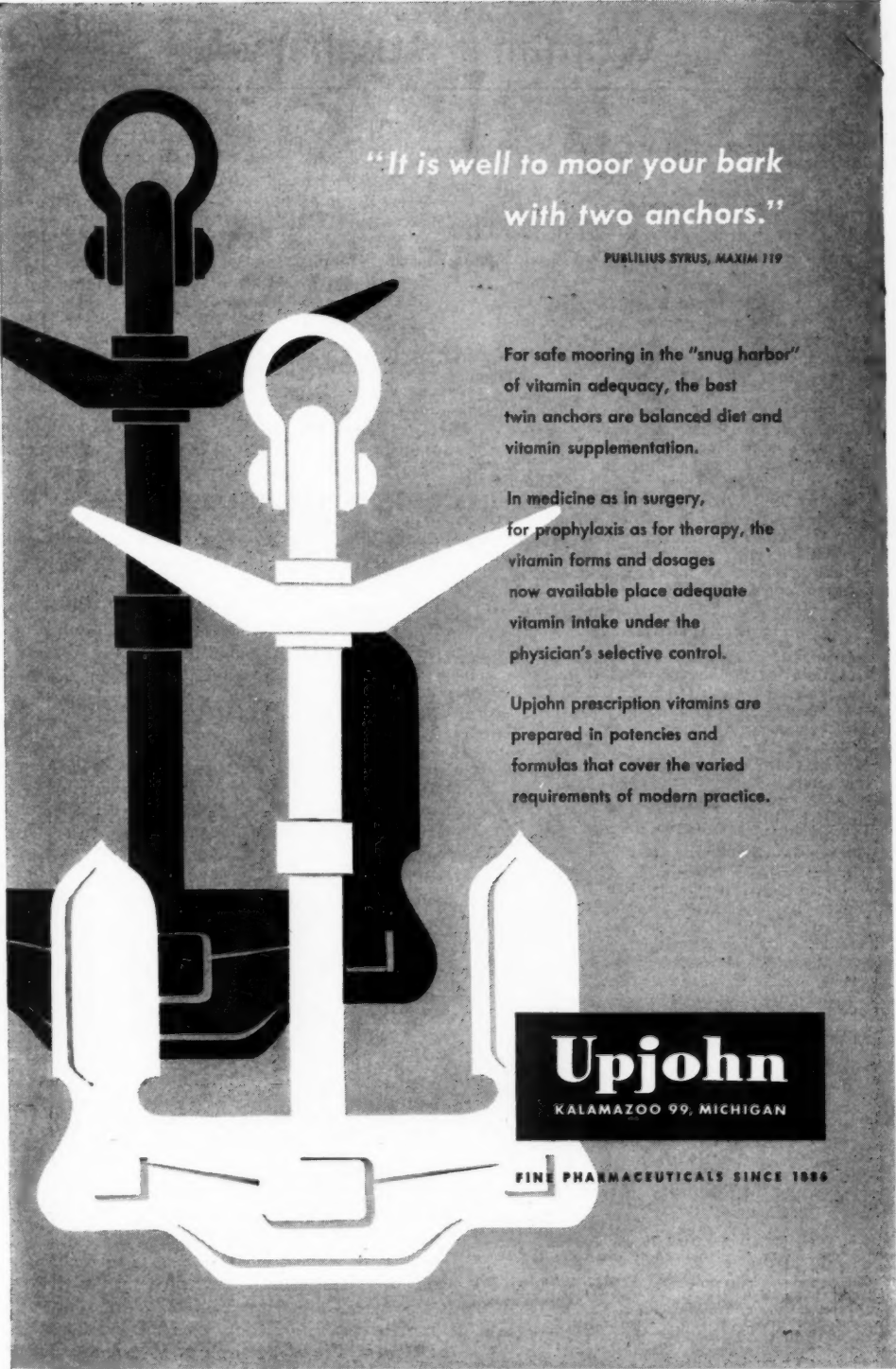
1853 West Polk Street,  
Chicago 12, Illinois  
August 30, 1949

**MELORHEOSTOSIS**

(Continued from Page 985)

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# Woman's Auxiliary

## INFORMED AUXILIARY DOUBLY IMPORTANT

Mrs. David Halpern

"This year is a critical one and must be one of study," writes Mrs. Leo J. Schaefer, Salina, Kansas, national Auxiliary program chairman, as she presents an outline of program material for state Auxiliaries and their component county Auxiliaries.

"The suggested material is not new," Mrs. Schaefer explains, "but we feel that greater emphasis must be placed on the program given at Auxiliary meetings. A background of information then may be built up to act as a bulwark against any force which may endanger the place of the doctor in our country. A national, state or county program is only as effective as the information each member is able to give when questioned."

"This year let us aim to have each subject presented and discussed as in a study club, group discussion, panel discussion or lecture form. As busy adults, too often we acquire a 'reading knowledge' instead of a speaking knowledge of current affairs. In this period of American thinking, we must develop a speaking knowledge, fortified with authentic information. It is your duty and privilege to interpret and support the ideals of organized medicine."

### Program 1949-1950

- I. Twelve-point program of the American Medical Association, for the advancement of medicine and public health (1) (4) (6)\*
  1. A federal Department of Health
  2. Medical research
  3. Voluntary insurance
  4. Medical care authority with consumer representation
  5. New facilities
  6. Public health
  7. Mental hygiene
  8. Health education
  9. Chronic diseases and the aged
  10. Veterans' medical care
  11. Industrial medicine and accident prevention
  12. Medical education and personnel.
- II. The AMA—its history, function, work of the various councils, bureaus and other departments (1) (4)
- III. Study legislation—local, state and national, which affects health and medicine.
  1. Truman's compulsory health insurance plan (5)
  2. Oscar R. Ewing's "The Nation's Health—a Ten Year Program" (2)
  3. AMA's answer to compulsory health insurance (1) (4) (5)
- IV. Voluntary prepayment medical and hospital care plans (5)
  1. Familiarize yourself with the plan used in your state.
- V. State Board of Health (3)
  1. Study services available

\*Numbers in parenthesis correspond to the following list of sources where material may be obtained to carry out the above program.

- (1) National program chairman—Mrs. Leo J. Schaefer, 700 Highland, Salina, Kansas.
- (2) U. S. Printing Office, Washington, D. C.
- (3) State or county Board of Health departments
- (4) Bureau of Health Education of the AMA, 535 North Dearborn street, Chicago 10, Illinois
- (5) State or county medical societies
- (6) Bulletin of Woman's Auxiliary to the AMA, March, 1949
- (7) National League of Nursing Education, 1790 Broadway, New York 19, New York.

- VI. Local health department (3)
  1. Study services available in city and county.
- VII. School health program (1) (4)
- VIII. Rural health problems and their proposed solutions (1) (4) (5)
- IX. Nurse recruitment (1) (7)
  1. Methods and information available
- X. Radio programs of the AMA presented by the Bureau of Health Education (4)
- XI. Hygeia (4)

## HYGEIA CONTEST DEADLINE

Mrs. J. A. Cosgriff

The American Medical Association has announced another *Hygeia* contest, extending from September 1, 1949, to January 31, 1950, with cash awards going to the following Auxiliary groups: Group 1, membership of 1 to 18; group 2, membership of 19 to 35; group 3, membership of 36 to 99; group 4, membership of 100 or more; group 5, State Auxiliaries.

No Auxiliary will be given a cash prize nor special recognition unless it has secured at least 25 subscription credits. For example: if an Auxiliary has 10 members and secures 10 subscription credits, its percentage is 100; but, in order to be eligible for a cash prize, the Auxiliary must have gained a minimum of 25 subscription credits. Auxiliaries with a membership of 25 or more must have a percentage of 100 to be eligible for a cash prize. No county Auxiliary will be given credit for subscriptions taken from members at large or other county auxiliaries that are organized.

Prizes are based on the group quota and the number of subscription credits obtained. The quota is the number of members in the Auxiliary who have paid their Auxiliary membership dues at the close of the previous fiscal year. This arrangement gives the Auxiliary with a small membership an equal chance with the larger ones in its particular group. An Auxiliary, for instance, that has 20 members and secures 20 subscriptions would have reached its quota and have a rating of 100 per cent. Furthermore, if an Auxiliary has only 20 members and secures 80 subscriptions, it would have a rating of 400 per cent and would win over an Auxiliary that has 30 members and secures 90 subscriptions, with a rating of 300 per cent.

A one-year subscription will count as one credit; a two-year subscription as two credits; a three-year subscription, three credits; a six-month subscription, one-half credit. No distinction in credits is made with regard to new or renewal orders. In the event of a tie, the county sending in the largest number of two-year and three-year subscriptions will be awarded the prize.

Each county president has received, or will receive, all the necessary information from the circulation director of *Hygeia*. She should appoint a *Hygeia* chairman and urge her to contact schools, libraries, beauty parlors,

(Continued on Page 1049)

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## ◆ Of General Interest ◆

The American Medical Association reported in September that the 1949 class of graduating physicians numbered only 5,094—the smallest class in ten years. It was expected, however, that the incoming group of medical freshmen this fall would be the largest on record, about 6,900.

\* \* \*

During the second half of August and early September, Dr. John A. Watkins of Windom conducted the practice of Dr. A. T. Kapsner in Princeton while Dr. Kapsner was on vacation. A graduate of the University of Minnesota Medical School in 1947, Dr. Watkins served his internship at St. Luke's Hospital in Duluth and at Wayne County General Hospital in Detroit.

\* \* \*

"Common Neuropsychiatric Problems Encountered in General Practice" was the title of an address given by Dr. Gordon R. Kamman, Saint Paul, at a meeting of the Cerro Gordo County Medical Society in Mason City, Iowa, on September 13.

\* \* \*

Dr. R. E. Johnson, superintendent and medical director of Sunnyrest Sanatorium in Crookston since October, 1943, resigned his position in August. He announced at the time that he had no immediate plans other than taking a rest for several months. He was replaced in the sanatorium post by Dr. R. R. Hendrickson, formerly of Lake Park.

\* \* \*

An editorial in the *Blue Earth Register* on September 6 stated that the village of Bricelyn had been without a physician for more than a year and that residents of the community were trying to arrange for an office and a home as an inducement for an interested physician. The editorial recommended Bricelyn to any young medical graduate looking for a location.

\* \* \*

The resignation of Dr. E. S. Mariette, superintendent of Glen Lake Sanatorium since 1916, was accepted by the Glen Lake Sanatorium Commission, September 8, it was announced by Dr. S. Marx White, president of the Commission. Dr. Mariette has been ill since early August when he was stricken by a cerebral hemorrhage.

Dr. Mariette came to Glen Lake Sanatorium as its first resident physician January 1, 1916. Within the same year, he became its superintendent and medical director, a position he has occupied continuously for the past thirty-three years.

Under his direction, Hennepin County's hospital for the tuberculous has achieved national recognition as one of the great tuberculosis sanatoria of the United States. It was the first tuberculosis hospital in the country to receive a Class-A rating from the American College of Surgeons (1927).

Dr. Mariette, throughout his career as medical director of Glen Lake Sanatorium, has been a participant in

tuberculosis control work in Minnesota and on a national scale. A member of the board of directors of the National Tuberculosis Association, he served as president of the Mississippi Conference on Tuberculosis, as president of the Minnesota Trudeau Society and from 1946 through 1948, as president of the Hennepin County Tuberculosis Association. He was chairman of the American Trudeau Society's Committee on Rehabilitation. He was a member of the Hennepin County Medical Society, the Minnesota State Medical Association, the American Medical Association and the American Hospital Association. He is an assistant professor of medicine at the University of Minnesota.

Many outstanding physicians in tuberculosis work were trained under his direction at Glen Lake Sanatorium. Among these: Dr. Frank L. Jennings, superintendent and medical director of Sunnyside Sanatorium, Indianapolis; Dr. Charles K. Petter, medical director of Lake County Tuberculosis Sanatorium, Waukegan, Illinois, and Dr. R. Backus, assistant superintendent of Nopeming Sanatorium, Nopeming. Tuberculosis specialists from many foreign countries have come to Glen Lake Sanatorium to observe its methods of treatment.

A special contribution of Dr. Mariette was his pioneer use of BCG vaccine in the protection of nurses caring for the tuberculous, and in initiating an in-sanatorium program for the rehabilitation of tuberculosis patients. Under his direction, Glen Lake was one of the first sanatoria to establish a co-ordinated rehabilitation program, offering educational training and vocational counseling to patients while under treatment.

Because of Glen Lake Sanatorium's reputation for exact techniques, it was one of few sanatoria frequently selected for special studies, according to Dr. S. Marx White, president of the Glen Lake Sanatorium Commission.

Dr. Mariette is the author of many articles, published in medical and nursing journals, on various aspects of the control and treatment of tuberculosis.

Dr. Mariette was born January 3, 1888, in southern Minnesota. He received his training at the University of Minnesota, obtaining his medical degree in 1913. From 1913 to 1916 he was on the staff of Nopeming Sanatorium.

He has participated directly in the tuberculosis control work of all official and voluntary health agencies in Minneapolis and Hennepin County. His special interest has been in providing medical examination, including tuberculin tests, for rural Hennepin County school children, and in all projects to locate unknown tuberculosis cases.

His resignation will become effective November 1.

\* \* \*

Dr. William B. Stromme, Minneapolis, was guest speaker at a meeting of a postgraduate medical group in Le Mars Iowa, on September 28. His subject was

(Continued on Page 1042)





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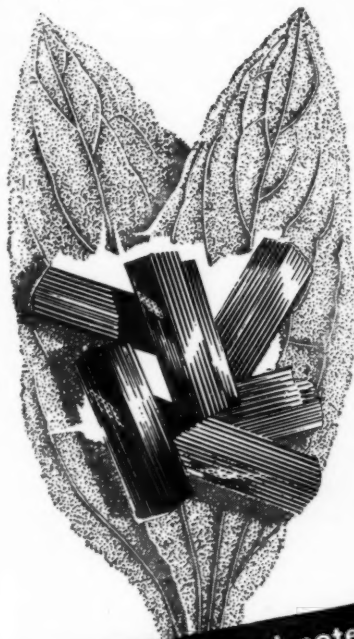
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(Continued from Page 1040)

"Management of Difficult Labors." On October 11, Dr. Stromme presented a lecture on "Management of Normal Pregnancies" before the undergraduate students at Cornell University Medical College, New York.

\* \* \*

Dr. Mitrofan Smorszczok, former practitioner in Poland, addressed a joint meeting of the Rotary and Lions Clubs in Stillwater on September 12 and described the faults of socialized medicine in Soviet-controlled countries.

\* \* \*

On September 5, Dr. Catherine Burns announced that she had become associated in practice with Dr. S. A. Whitson, Dr. J. P. Person and Dr. T. M. Hansen in the Medical Arts Clinic, Albert Lea. A graduate of the University of Minnesota Medical School, Dr. Burns served in the Navy at Great Lakes, Illinois, during the recent war. She then studied at the New York Postgraduate Medical School before opening a practice in Duluth. During last winter she practiced in Fairbanks, Alaska. She is the daughter of the late Dr. H. D. Burns.

\* \* \*

Red Wing acquired a new physician early in September when Dr. Byron B. Cochrane, formerly of Saint Paul, joined the staff of the Interstate Clinic. An ophthalmologist, Dr. Cochrane is heading the eye department of the clinic.

After graduating from the University of Minnesota Medical School in 1937, Dr. Cochrane served his internship at Miller Hospital, Saint Paul, and then engaged in general practice in Saint Paul for two years. From 1940 to 1945 he served in the army part of the time in the Pacific area. Following his discharge, he completed a four-year combined residency in ophthalmology at University and Miller Hospitals. He was associated with Dr. F. E. Burch of Saint Paul until August 31 of this year, when he moved to Red Wing.

\* \* \*

Dr. H. G. Rice, after being associated with the Aitkin Clinic since March, 1946, left for Moorhead on September 1 to resume a private practice that he conducted there before World War II. Dr. Rice served during the war as a Naval flight surgeon.

\* \* \*

Change of address was announced recently for six Minneapolis physicians. The physicians and their new addresses are as follows: Dr. Milton E. Baker, 1409 Willow Street; Dr. Robert G. Tinkhaw and Dr. Curtis V. Rockwell, 3940 Market Street, Edina; Dr. Benedict Trach, 4204 Cedar Avenue; Dr. Barton G. Olson, University of Minnesota Hospitals; Dr. John E. Twomey, General Hospital.

\* \* \*

A four-week postgraduate course in general surgery was completed by Dr. Richard P. Virnig, Wells, on August 6. The course was presented by members of the surgical staff of Cook County General Hospital in Chicago.

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A public meeting, sponsored by the Bloomington Community Health Council, was held in Bloomington on September 9 to discuss the proposed centralized health authority for rural and suburban Hennepin County. Among the speakers at the meeting was Dr. A. B. Rosenfield, director of District Health Unit No. 6, State Department of Health.

\* \* \*

Dr. Tom Davis, II, planned to leave Wadena in October to spend three months doing specialized work in eye surgery in India, at a mission in the town of Patna. A graduate of the University of Minnesota Medical School, Dr. Davis has been a member of the staff of the Davis Clinic in Wadena.

\* \* \*

The Minnesota Division of the American Cancer Society announced on September 8 that it had received a \$25,000 grant toward completion of the Minnesota Cancer Research Institute at the University of Minnesota. The grant increases funds made available to the institute in the past two years to \$225,000. The institute is designed to occupy two floors of the proposed Mayo Memorial building on the University campus.

\* \* \*

It was announced on August 20 that Dr. Nesmith P. Nelson of Brainerd planned to retire about September 1, and that Dr. George J. Halladay, formerly of Minneapolis, would occupy Dr. Nelson's office. Dr. Nelson has practiced in Brainerd for twenty-eight years, main-

taining the same office throughout that time. Before moving to Brainerd, he practiced in Washington, D. C., and Minneapolis.

\* \* \*

Dr. S. R. M. Reynolds of the Carnegie Institution of Washington and Johns Hopkins Medical School, Baltimore, Maryland, will be guest faculty member at a continuation course in obstetrics to be presented by the University of Minnesota on November 17, 18 and 19. The course, which is intended for specialists in obstetrics and gynecology will be held at the Center for Continuation Study. Dr. Reynolds will speak on the subjects, "The Development of the Pregnant Uterus" and "Uterine Mechanisms in Normal and Abnormal Labor."

\* \* \*

On August 11 it was announced that Dr. Warren Haesley of Winona had purchased the medical practice of Dr. Richard F. Herbst in Wykoff and would open his office there soon.

\* \* \*

Formerly of Mankato, Dr. Albert E. Krieser became associated in practice with Dr. L. J. Hoyer in Windom on September 1. During the recent war Dr. Krieser was in military service in Alaska and Germany.

\* \* \*

The Arrowhead Clinic in West Duluth announced on August 4 that Dr. John Van Duyn, formerly of Syracuse, New York, had joined the clinic staff. A graduate of Johns Hopkins Medical School, Dr. Van Duyn was an



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Surgery of Colon and Rectum, one week, starting October 10, November 28.  
Esophageal Surgery, one week, starting October 10.  
Breast and Thyroid Surgery, one week, starting October 10.  
Thoracic Surgery, one week, starting October 3.  
Fractures and Traumatic Surgery, two weeks, starting October 3.
- GYNECOLOGY**—Intensive Course, two weeks, starting October 24.  
Vaginal Approach to Pelvic Surgery, one week, starting November 7.
- OBSTETRICS**—Intensive Course, two weeks, starting November 7.
- MEDICINE**—Intensive General Course, two weeks, starting October 3.  
Gastroenterology, two weeks, starting October 24.  
Gastroscopy, two weeks, starting October 24.
- DERMATOLOGY**—Formal Course, two weeks, starting October 24. Informal Clinical Course every two weeks.
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instructor in general surgery at the University of Syracuse before he became affiliated with the clinic in Duluth.

\* \* \*

Dr. O. A. Eide opened offices for the practice of medicine in Hancock on August 15. In addition to his practice in Hancock, he is assisting his father-in-law, Dr. A. I. Arneson of Morris, at the Stevens County Hospital. A graduate of the University of Minnesota Medical School, Dr. Eide interned at General Hospital in Salt Lake City, Utah. He then served for nearly two years at an Army hospital in Osaka, Japan, returning to the United States in June of this year.

\* \* \*

During August, Dr. Daniel L. Donovan, of the Albert Lea Medical and Surgical Center, attended a two weeks' postgraduate course in diseases of the heart at the University of Chicago.

\* \* \*

The clinical use of anticoagulants was the subject discussed by Dr. E. V. Allen, Rochester at a meeting of the Black Hills District Medical Society at Spearfish, South Dakota, On August 11. Dr. Allen is senior consultant in the diagnostic division of general medicine and surgery at the Mayo Clinic.

\* \* \*

The appointment of Dr. Joseph L. Whelan as chief of the neurology service at Minneapolis Veterans Hospital was announced in August. A graduate of the University of Minnesota Medical School in 1942, Dr. Whelan interned at Detroit Receiving Hospital and then served with the U. S. Air Forces for three years. After his discharge he took postgraduate training in neurology and psychiatry at the University of Pennsylvania Hospital, Wayne University College Hospital and the University of Minnesota Medical School.

\* \* \*

Dr. Leong Hom arrived in Monticello early in August to be associated in practice with Dr. W. E. Hart. A graduate of the University of Minnesota Medical School, Dr. Hom served his internship at St. Barnabas Hospital, Minneapolis.

\* \* \*

Dr. Thomas G. Wellman, practitioner in Lake City, moved to Clinton, Iowa, on July 29 to accept an appointment to Schick General Hospital, which is operated by the Veterans Administration. Dr. Wellman began practice in Lake City in 1940. He entered military service with the Army Air Forces in 1943 and served for three years. Following his discharge, he returned to his practice in Lake City.

\* \* \*

Guest of honor at a tea on August 14 in the Mayo Clinic Women's Club was Dr. Della G. Drips, Rochester, who was presented with a silver service in appreciation of her years of service to the club and to thank her for acting as club physician since 1937.

\* \* \*

Dr. H. H. Theissen who began practicing in Excelsior about August 1, is associated in practice with Dr. M. H. Seifert and Dr. J. A. Dupont of that city. Dr. Theissen served his internship at St. Mary's Hospital, Minneapolis.





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A sixty-day leave of absence was granted Dr. Frank J. Hill, Minneapolis health commissioner, by the Minneapolis board of public welfare on September 2. The purpose of the leave of absence was to enable Dr. Hill to recover from what his personal physician described as nervous exhaustion caused by overwork. Dr. F. G. Gunlaugson, director of communicable disease control in the health department, was named by the board as acting city health commissioner.

\* \* \*

The Minneapolis Children's Cerebral Palsy Center, the first of its kind in the city, opened on August 30 to provide pre-school training for spastic children from two to four years old. The Center officials stated that about twenty children would be cared for five days a week during the next eleven months. Registered therapists have been hired to staff the Center, and a medical committee of ten physicians, headed by Dr. E. J. Huenkens, provides professional guidance.

\* \* \*

Dr. Orville N. Nelson, formerly a practitioner in Battle Lake but who has been located for the past several years in St. Petersburg, Florida, was a guest at a Rotary Club meeting in Fergus Falls on August 17. He was spending his vacation at his summer home on Botle Lake.

\* \* \*

Head of the surgery department of the new Royal C. Johnson Hospital in Sioux Falls is Dr. Nicholas G. Booselis, who was appointed to the post in August. A native of Faribault, Dr. Booselis received his medical training at the University of Minnesota Medical School.

After completing his internship at St. Mary's Hospital, Duluth, he practiced for a short time at Sauk Center, then entered military service in 1942. Following his discharge in 1946, he completed a residency in general surgery at the University of Minnesota Hospitals and Minneapolis Veterans Hospital.

\* \* \*

Dr. Grant Garlock has become associated in practice with Dr. D. H. Garlock, Dr. A. V. Garlock and Dr. J. K. Hartjen in Bemidji. The son of Dr. D. H. Garlock, Dr. Grant Garlock recently completed his internship at the West Suburban Hospital in Chicago.

\* \* \*

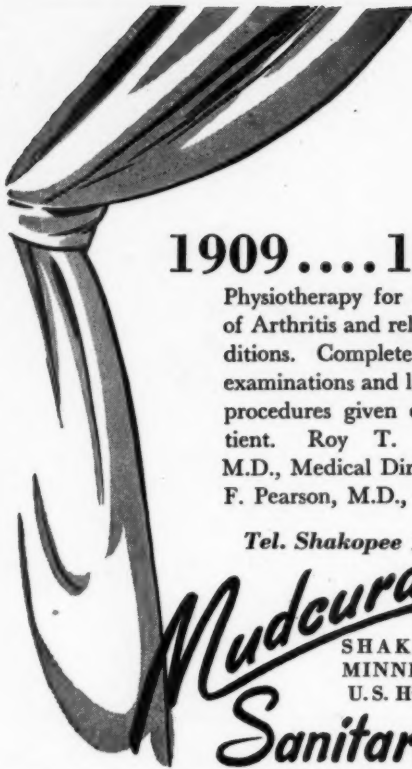
Dr. Wallace Hill moved from Windom early in August, planning to tour Minnesota and North Dakota in a search for a new location for his practice. During the past year Dr. Hill was associated in practice with Dr. L. J. Hoyer in Windom.

\* \* \*

Forty-two years of medical service and civic leadership by Dr. William H. Barr were commemorated by Wells residents at an honor banquet given for the physician on August 31. The banquet and program of tribute were given by the Boy Scouts, Cub Scouts, Campfire Girls and Blue Birds of Wells in recognition of Dr. Barr's service to the children of the community.

The program at the banquet consisted mainly of vocal selections, short talks and skits presented by members of the youth organizations. At the conclusion a scrapbook containing pictures of Dr. Barr's "children" was presented to the physician.

Dr. Barr, a graduate of the University of Illinois



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Medical School, has practiced in Wells since 1907. In his forty-two years there he has served in numerous civic capacities, having been mayor, school board member, chairman of the board of health, and a leader in many other fields of activity. He was a member of the state board of medical examiners for ten years and a member of the state board of health for eight years. In addition to his private medical practice, he is president of the Peoples State Bank, president of the Wells Cemetery Association, and district surgeon for the Milwaukee Railroad.

\*\*\*

Dr. Earl C. Elkins, Rochester, took office as president of the American Congress of Physical Medicine on September 8 at a meeting of the group in Cincinnati, Ohio. The title of his presidential address was "Education in Physical Medicine and Rehabilitation."

\*\*\*

It was announced late in August that Dr. Lyle V. Berghs would resume his practice in Owatonna on September 1, after several months of convalescence in Montana following a major operation.

\*\*\*

Dr. R. I. Gruys, formerly of Detroit, is now associated in practice with Dr. H. C. Stratte and Dr. L. L. Sogge in Windom. A graduate of the University of Minnesota Medical School, Dr. Gruys recently completed three years of practice at Wayne County Hospital in Detroit.

\*\*\*

Major construction work had been completed early in September on a new medical clinic building being erected in Moose Lake by Dr. Alvin Sach-Rowitz. When finished, the structure will house a reception room, consulting room, laboratories, x-ray room, operating room, four examining rooms, and a dental office with laboratories, and a dark room. The upper floor of the two-story building will be divided into three modern apartments. Dr. Sach-Rowitz hoped to be able to move into the new clinic before the end of the year.

\*\*\*

In a talk before the Kiwanis Club in Austin on August 17, Dr. Paul C. Leck of that city denied that a health crisis existed in the United States. In pointing out the progress made by medical science—reducing infant mortality, increasing life expectancy, et cetera—he showed that the claims made by the government officials that a health crisis exists are false. He stated that under socialized medicine there is no assurance that voters would get complete medical service for nearly nothing. "About the only thing the people could be sure of under the government plan," Dr. Leck added, "would be that they would have to pay through special taxes."

\*\*\*

Dr. Edward P. Burch of Saint Paul has been appointed surgeon of the Minnesota Department, Reserve Officers Association. Dr. Burch has been active in the direction of the association's affairs since its reactivation following World War II. He also holds the grade of colonel in the Medical Service Corps Reserve and

MINNESOTA MEDICINE

## OF GENERAL INTEREST

commands the 803rd Medical Center comprising ORC medical units in Minnesota.

As department surgeon, Dr. Burch will formulate the department's policy with regard to medical affairs as they pertain to the Organized Reserve Corps. The association, in turn, works closely with the Department of Defense in all matters related to the Reserve program. It serves as the collective voice of Reserve officers of the Army, Navy (including Marine Corps and Coast Guard) and Air Force.

\* \* \*

The health committee of the Virginia Chamber of Commerce sponsored a diabetic survey during the week of October 10 through 16. Believed to be the first project of its kind on a community-wide basis, the survey was aimed to uncover unsuspected cases of diabetes. All Virginia residents were urged to participate in the survey and have detection tests made. In charge of the survey was Dr. R. P. Pearsall, city health officer and chairman of the Chamber of Commerce health committee.

\* \* \*

Residents of Browns Valley received their medical care for a short time in August and early September from Dr. G. L. Barnett of Graceville, while Dr. John Noble, Browns Valley physician, recovered from minor injuries suffered in an automobile accident.

\* \* \*

Dr. Clinton C. Berg, formerly of Saint Paul, is now associated in practice with Dr. Lewis Reid in Excel-

sior. A graduate of the University of Minnesota Medical School, Dr. Berg interned at Ancker Hospital, Saint Paul, then served in the Army for two years. He returned from Japan last spring.

\* \* \*

It was announced in late August that poliomyelitis treatment facilities and services of the Sister Elizabeth Kenny Institute had been offered to physicians in the Upper Midwest area. Dr. E. J. Huenekens, medical director of the institute, said that letters stating this had been mailed to approximately 5,000 physicians in Minnesota, Wisconsin, Iowa, and North and South Dakota. He said that beds would be assigned to patients in the order in which requests were received.

\* \* \*

Dr. Julian F. DuBois, Jr., has become associated in practice with his father, Dr. Julian F. DuBois, and with Dr. John C. Grant, of the Sauk Centre Clinic. The younger Dr. DuBois served his internship at Sacred Heart Hospital in Spokane, then served in the Army for two years at the Veterans Hospital at Fort MacKenzie, Sheridan, Wyoming. He recently completed a residency in surgery at Northern Perimanitti Foundation, Vancouver, Washington.

\* \* \*

The third annual meeting of the Minnesota Public Health Conference was held September 30 at the Nicollet

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## OF GENERAL INTEREST

Hotel in Minneapolis. Dr. T. B. Magath, Rochester, president of the state board of health, presided at a luncheon meeting of physicians and health officers. The principal speaker at the evening banquet was Dr. Leonard A. Scheele, Surgeon General of the United States Public Health Service.

\* \* \*

Dr. Owen H. Wangenstein, chief of surgery at the University of Minnesota, was the recipient of the first award made by the Minnesota division of the American Cancer Society for distinguished service in cancer control at a meeting held September 23, 1949. Dr. Wangenstein has been chief of surgery since 1930, having received the appointment at the age of thirty-two. He has been particularly interested in methods for the detection and treatment of early cancer of the digestive tract.

### HOSPITAL NEWS

The new administration and receiving building at the Hastings State Hospital will be completed in May, 1950, at a cost of \$917,000. The structure will have two wings, one 131 feet and the other 200 feet long. It will house offices, public reception facilities, a lounge and lunch counter for visitors, a library and gymnasium-auditorium, a cafeteria and forty private bedrooms.

\* \* \*

Mr. Lyle Horton, former assistant manager of the Colonial Hospital in Rochester, has been appointed manager of the Kahler Hospital in the same city. He suc-

ceeds Mr. Frank A. Menk, who is now assistant administrator of the George Washington University Hospital.

\* \* \*

Glen Lake Sanatorium will be able to have a balanced budget in 1950, for the first time since 1945. The sanatorium will be "in the black" because of the allowance of the full 4.75 mills which the 1949 legislature authorized the county board to levy for current operations. The full allowance will raise at least \$1,589,675 next year and will permit the institution to pay off an expected deficit of \$145,000 from 1949.

\* \* \*

It was announced on August 10 that construction work on the \$320,000 Community Hospital in Baudette was proceeding at a rapid rate. Brickwork was near completion and plumbing was being installed.

### BLUE SHIELD NEWS

Blue Shield is rapidly increasing from month to month. From January 1 to August 31 this year, care given Blue Shield members amounted to \$676,693.87, covered 17,790 cases and 3,992 separate services. This is an increase of 1116.36 per cent over last year's \$55,632.74 paid out on Blue Shield cases during the same eight-month period.

As of August 31, 1949, there were 2,468 Blue Shield participating doctors of medicine, and the latest count shows approximately 225,000 persons covered by Minnesota Blue Shield.



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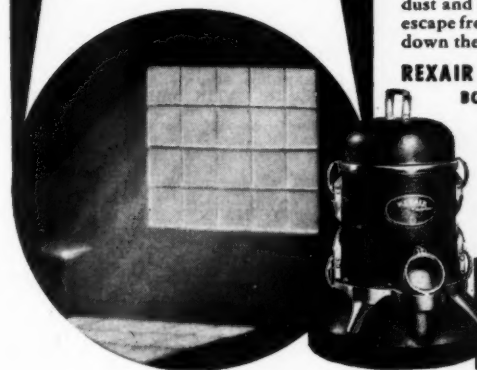
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# Rexair

Because of increased growth it has become necessary for the Blue Shield office to devise and put into operation a new method of processing Blue Shield cases. Procedures of older and larger Blue Shield plans were studied and observed, and the wishes of the physician were kept in mind in planning the new process.

The new method will be used in Minnesota in the very near future, but before it becomes effective each doctor and his office personnel will receive a detailed account as to how it works.

The new procedure requires a new report form of three parts with carbon inserts. The second carbon is to be retained by the attending physician for his files. The original and first carbon is to be mailed to the Blue Shield office. The Blue Shield office will process the case and return the original to the physician with his check.

Many physicians have difficulty identifying the patient from the check voucher as it lists the patient's name only while the doctor's office records may be kept in the name of the family head. The new report form contains the names and addresses of both the patient and the family head on the original copy.

In order to avoid unnecessary work in completing forms, it will be advisable for the doctors' office personnel to become familiar with the benefits provided by the Minnesota Blue Shield. Every assistance will be given by the Blue Shield office in supplying the needed information.

In addition to streamlining the procedure for handling of cases, the new process will indicate to the Blue Shield patient and to the public in general that the

medical profession of Minnesota is supporting voluntary prepaid health care in preference to government controlled medicine. It will be concrete evidence that the family doctor has the interest of his patients at heart and that he is willing to aid them in receiving Blue Shield benefits, which, incidentally, have been increased twice within sixty days at no increase in cost to the subscriber.

The Medical Advisory Committee's recommendation to increase the payment to participating doctors of medicine from the present \$75 to \$100 for appendectomy procedures performed on and after October 1, 1949, was approved by the Board of Directors of Minnesota Medical Service Inc. All Blue Shield participating doctors of medicine have received letters to this effect.

Blue Cross is still growing. From January 1 to August 31, 1949, Minnesota Blue Cross provided benefits to 95,702 Blue Cross subscribers, amounting to \$5,556,564.76. There are now 950,266 persons covered by Minnesota Blue Cross.

## WOMAN'S AUXILIARY

(Continued from Page 1038)

doctors, dentists and others. With such articles as "Information for Mothers," "Questions and Answers," "Schools for Pre-Schoolers," and "Child Training," a gift subscription would be ideal for every home, and particularly for all young mothers.

Auxiliary members are urged to subscribe and to procure other subscriptions in order to expand *Hygeia's* reading public.

## BOOK REVIEWS

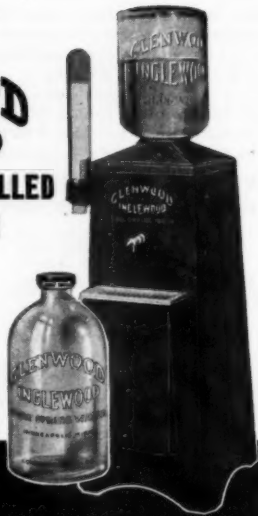
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## BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

**MANUAL OF HUMAN DISSECTION** (Shearer's). Second Edition. Charles E. Tobin, Ph.D., Editor. Associate Professor of Anatomy, University of Rochester School of Medicine and Dentistry. 286 pages. Illus. Price \$4.50, cloth. Philadelphia: The Blakiston Co., 1949.

**PHENOL AND ITS DERIVATIVES: The Relation Between Their Chemical Constitution and Their Effect on the Organisms.** W. F. von Oettingen, U. S. Public Health Service. 408 pages. Price, 70c, paper cover. Washington: Federal Security Agency, 1949.

**MANUHUANA IN LATIN AMERICA—The Threat It Constitutes.** Pablo Osvaldo Wolff, M.D., Ph.D., M.A. Member of Expert Committee on Habit Forming Drugs of the World Health Organization. 56 pages. Price \$1.50, paper cover. Washington: The Linacre Press, 1949.

**EVERYDAY PSYCHIATRY.** John D. Campbell, M.D. Diplomate, American Board Neurology and Psychiatry; Psychiatrist to St. Joseph's Infirmary and Crawford W. Long Hospital, Atlanta, Ga.; Instructor in Psychiatry, Emory University Medical School; Captain, M.C. U.S.N.R. 2d ed. 394 pages. Price \$6.00. Philadelphia: J. B. Lippincott Co., 1949.

Everyday Psychiatry is the scientific book written in a style easy to read. The book is highly recommended as an aid to the understanding of motivations and behavior of patients in all specialties of medicine. Each reader will probably find a different application of the information obtained from this text.

This reviewer found especially valuable the clarity of classification of the psychoneuroses, making it possible to classify easily the majority of psychoneurotic patients. The problem of futility in treating the immutable psychopathic patient is well presented documented and convincing.

B. J. MEARS, M.D.

**RYPINS' MEDICAL LICENSURE EXAMINATIONS.** Edited by Walter L. Biering, M.D., F.A.C.P., M.R.C.P. (Ed'n. Hon.) 6th ed. 690 pages. Price \$6.00. Philadelphia: J. B. Lippincott, 1947.

This book offers a brief review of anatomy, pathology, physiology, chemistry, bacteriology, pharmacology, surgery, medicine, obstetrics and gynecology, hygiene and preventive medicine, psychiatry. The plan of the book

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## BOOK REVIEWS

is to present a summary of the subject, and to follow it by a list of questions commonly found on State Board examinations.

The book affords an excellent basis for review of the subjects covered (all that are usually required for State Board examinations), especially for one who is not a recent graduate. Anatomy and pathology of course must be studied in conjunction with specimens and slides, or at least an illustrated standard textbook, but the various chapters form an excellent outline of the essential material.

The book might also prove useful to medical students as a final pre-exam review. It would not be suitable as a general quick reference book because there is little detail, and due to the large amount of material covered the index is necessarily sketchy.

Introductory notes on the philosophy and nature of examinations, with particular reference to National and State Boards are helpful and well thought out.

The latest edition features a new chapter on psychiatry.  
J.A.M.

**HANDBOOK OF MATERIA MEDICA, TOXICOLOGY, AND PHARMACOLOGY.** By Forrest Ramon Davison, B.A., M.Sc., Ph.D., M.D. Consultant and Toxicologist, Minneapolis, Minnesota; formerly Assistant Professor of Pharmacology in the School of Medicine, University of Arkansas, Little Rock; Medical Department, The Upjohn Co., Kalamazoo, Mich., Assistant professor of Pharmacology, University of Tennessee Medical School, Toxicologist to University Clinics, Memphis, Tennessee, 4th ed., 730 pages, illus. Price \$8.50. St. Louis: C. V. Mosby Co., 1949.

The fourth edition of Davison's Handbook, just off the press, brings the subject up to date by the addition

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## BOOK REVIEWS

of the new drugs. This has been done without crowding out those drugs and preparations with well-established therapeutic value.

This, as well as the previous editions, is a middle of the road type; that is, it does not treat the subject superficially, but gives enough scientific detail to satisfy the student and the busy practicing physician. At the end of each chapter, a list of references is given to guide those wishing to make a more thorough study of any certain drug.

F. H. MAGNEY, M.D.

**MANUAL OF MEDICAL EMERGENCIES.** By Stuart C. Cullen, M.D., Professor of Surgery, Chairman, Division of Anesthesiology, State University of Iowa College of Medicine, and E. G. Gross, M.D., Professor and Head of Department of Pharmacology, State University of Iowa College of Medicine. 267 p. illus. Price \$3.75, cloth. Chicago: Year Book Publishers, Inc., 1949.

Any physician at any time during his lifetime will find himself at the scene of an acute medical emergency. His conduct at that time is important not only because of its reflection on his prestige but because the victim's life depends on it.

This book discusses principles of emergency care, some of which are not commonly known among physi-

cians but are, nevertheless, very important. Especially valuable are the chapters on artificial respiration, circulatory emergencies, and acute poisonings. This is a concise, well-written book which may readily be used for reference.

D.W.H.

## TREATMENT OF CARPAL NAVICULAR INJURIES

(Continued from Page 994)

had an excellent result, with complete range of normal painless wrist motion.

### Conclusions

These are the important points to be remembered in treatment of carpal navicular fractures:

1. All injuries of the wrist should be carefully examined for possible navicular bone fracture and x-rayed immediately.

2. Initial negative x-rays with positive clinical findings for fracture do not necessarily rule out a fracture. The wrist should be immobilized immediately and x-rays taken again in from one to three weeks.

3. Immobilization should be immediate, continuous, and prolonged until x-ray evidence of the union is demonstrated.

4. Almost 100 per cent of acute fractures of the navicular bone heal with little or no residual disability in the wrist if immobilization is instituted immediately.

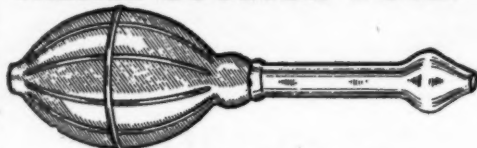
5. Bone-graft operation, in experienced hands, offers the best chance for healing in cases of delayed union and non-union.

6. Bone grafting is more accurate when the proximal navicular fragment is slotted with a chisel and the distal fragment drilled under direct vision.

### References

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4. Soto-Hall, R., and Haldeman, K. O.: Fractures of the carpal navicular bone. *J. Bone & Joint Surg.*, 39:841, 1941.

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